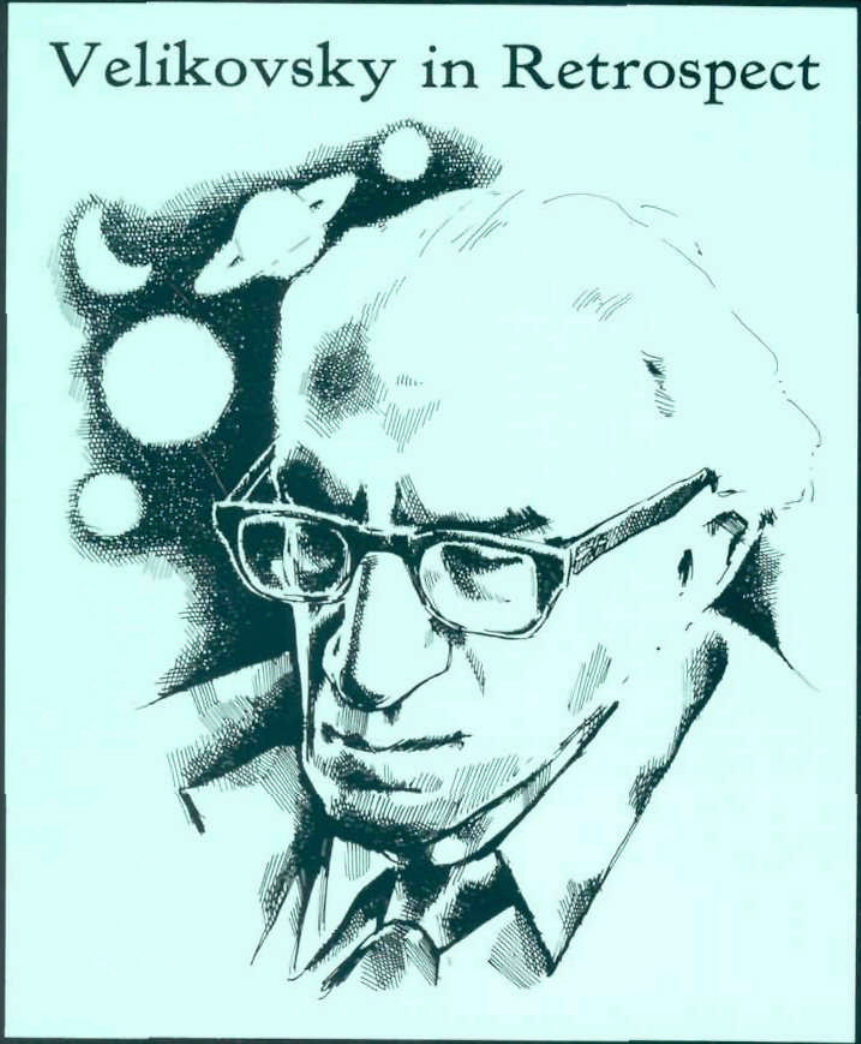
the Skeptical Inquirer

Velikovsky in Retrospect



Academia and the Occult / ESP and Psychologists
Bigfoot in Lewiston / Parental Expectations of Miracles
Downfall of a Would-Be Psychic

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the Skeptical Inquirer
THE ZETETIC

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Manuscripts, letters, books for review, and editorial inquiries should be addressed to The Editor, THE SKEPTICAL INQUIRER, 3025 Palo Alto Dr., N.E., Albuquerque, N.M. 87111.

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Inquiries from the media about the work of the Committee should be made to Paul Kurtz, Chairman, CSICOP, 1203 Kensington Ave., Buffalo, N.Y. 14215. Tel.: (716) 834-3223.

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News and Comment

Cattle mutilations: Mystery deflated, mutologists miffed

When the results of the first federally funded study of the so-called cattle-mutilation phenomenon were announced this spring in Santa Fe, New Mexico, the reaction itself was highly revealing. "Total unadulterated bullshit," is how one self-proclaimed Colorado-based "mutologist" (as cattle-mutilation buffs call themselves) termed the study's findings. This restrained comment referred to the conclusion by study director Kenneth M. Rommel, Jr., that normal predator and scavenger action accounted for all the claimed "mutilations" investigated during the one-year project.

Reporters quickly found people to quote who disagreed with the conclusions, and letters to the editor appeared in various publications from persons proclaiming that there had to be some explanation other than predators. Even the *Albuquerque Journal*, New Mexico's largest newspaper, which had published several articles in the past two years promoting exotic theories about the mutilations, printed an editorial comparing Rommel to Richard Nixon, because both had been critical of the news media. Rommel had found that sensationalized and inaccurate reports in some newspapers and magazines were indeed a part of the problem.

These articles had disseminated, without much skeptical inquiry, descriptions of animals' rectums, sex organs, eyes, and tongues neatly excised "with surgical precision" (this phrase was used frequently), claims of "no physical evidence of predators" at the scene, and, occasionally, reports of strange lights or the sound of aircraft in the sky.

Given the misinformation and wild statements that had been floating about, Rommel said he expected his conclusions to come under strong criticism, as they quickly did. It was clear that many people wanted strongly to believe in the UFO, bizarre-cult, and government-conspiracy theories. They certainly didn't want any mundane explanation like predator action. As for the "mutologists" who had been doing their own "investigations," they seemed more interested in keeping alive the "mystery" than in arriving at any resolution, especially a nonexotic one. The sociological aspects are strongly reminiscent of other popular "true mystery" phenomena, such as UFO reports and psychic claims.

Rommel had been appointed to head up the animal mutilations project in April 1979 after Santa Fe District Attorney Eloy Martinez managed to get a $44,000 grant for it from the U.S.

Examples of news articles contributing to misinformation

Law Enforcement Assistance Administration. That came shortly after a rather strange federal hearing on cattle mutilations held in Albuquerque in the spring of 1979, under the instigation of U.S. Senator Harrison Schmitt of New Mexico *(SI,* Fall 1979, p. 11).

Rommel is a retired 28-year veteran of the FBI, where he spent 11 years in counterespionage work and 15 in bank robbery investigation. At the beginning of Rommel's two-hour news briefing in the State Capitol announcing the study results this past April 15, Martinez said Rommel was known among his peers as "hard-nosed, thorough, intelligent, and totally competent." It was clear also that he wasn't the type to brook much nonsense.

Although his study was directed specifically toward cattle-mutilation reports in New Mexico, Rommel sought information from the governors of every state, law agencies in many states, and veterinarians in the animal diagnostic laboratories of nine state universities. He and several associates investigated 24 suspected mutilations reported in New Mexico during the period of the study, most of which were in the northern part of the state, and collected and reviewed information on 90 reported mutilations in New Mexico since 1975.

Rommel stated his conclusions forthrightly: "I am of the opinion that all of the mutilations investigated by me were caused by, and totally consistent with what one would expect to find with, normal predation, scavenger activity, and normal decomposition of a dead animal.

"Further, based on my investigation, I am of the opinion that, with possibly very few exceptions, a good many of the other reported mutilations fall into this category.

"Further, I have not found one credible source that differs from this opinion, nor has one piece of hard evi-

dence been presented to me which would cause me to alter this opinion.

"In regard to the cases I have not investigated, I base this opinion on the following: I have found a great deal of very creative writing. I have also found statements and opinions totally unsupported by fact. I have also found errors in official reports of such a material nature as to create an entirely different picture from that which existed."

Rommel found the published reports of mutilation incidents he investigated to be filled with "errors of fact—errors of omission and commission." But he said the media also had been misled by the people they were quoting, including some local law officers.

The actions of natural scavengers—mainly coyotes, wild and domestic dogs, vultures, eagles, ravens, and flies—working on cattle already dead from natural causes account for every one of the 24 reported "mutilations" he and his associates have investigated in New Mexico since the study began, Rommel said.

Rommel noted that predators regularly go first for the soft parts of dead animals, such as the rectums, eyes, ears, tongues, and udders. He documented this in a series of color slides of the reportedly mutilated cattle, which he acknowledged were "not for the easily nauseated."

He showed that the famous "cored rectum" effect, claimed to be evidence of human surgery on the dead cattle, is typical of predator action. From a distance and to the untrained eye, the cored out rectums of the cattle appear to be neatly circularly incised. That's partly an effect of shrinkage and dessication. But close-up views show teethmarks and jagged edges where the flesh has been torn away. Damage by flies can also cause this effect.

The claims that other organs have been removed with surgical precision were similarly shown by his photos to be inventions of active imaginations. Ears and eyes were gone, but usually with all the mess one would expect from chewing and tearing. Another photo showed a swarm of flies—as Rommel facetiously described it—"performing precision surgery" on a steer's eye.

Typically, only the exposed side of the animal's head and body is so affected, the study found. Underneath, where they are out of reach of predators, the remains are undisturbed.

Few people realize how frequently range cattle die of natural causes, often of disease or from eating poisonous plants. One dead animal left a trail of diarrhea stretching back to a field where Rommel found three types of plants that are poisonous to cattle, including larkspur.

One animal that had died of larkspur poisoning was photographed over a number of days. As is usual with such poisoning, it died with its tongue hanging out. After three days, the tongue and right ear had been removed by predators. Three days later the udder had been ripped off and the now bulging rear end was beginning to be cored by the activity of hundreds of flies.

Reports of the animals being devoid of blood are a consequence of the fact that gravity causes the blood to drain to the lowest part of the carcass, where it coagulates and dries up. In other instances, Rommel showed, the blood drains out of body orifices and is quickly lapped up by predators.

Rommel similarly deflated the claims that there is no physical evidence of predators at the sites. Most investigators don't seem to consider the droppings of scavenger birds all over the animals as "physical evidence." Rommel photographed such droppings on many of the animals and personally witnessed six vultures at work on one. The birds, he found, can easily puncture a

steer's carcass and remove the internal organs.

In one case, fresh coyote feces were next to the dead animal. In another, the fur of a dog or wolf was found on a nearby barbed wire fence. In some of these reputedly "no evidence" cases, Rommel even found eyewitnesses who said they had seen coyotes and dogs eating at the carcass.

In another case, a newspaper report quoted someone who said the mutilated steer's legs were broken, presumably, so the theory went, in a drop from a helicopter. Rommel found a small problem with the report. The animal's legs were not broken, or else they had been mysteriously repaired before Rommel took his photo.

That was only one of the false statements connected with that particular incident. At the time, no one knew that Rommel had investigated the case, and he was able to compare his observations with those reported in a local newspaper. The write-up portrayed it as a "classic" mutilation case. None of the substantive claims were right, Rommel said. "The wife of the landowner was so disgusted with the coverage that she went down to the newspaper and told them I had investigated the case." Then—but not until then—both of the investigators reponsible for the information said they had been misquoted.

One article linking a supposed mutilation, itself bogus, with "weird lights in the sky" failed to mention that the aurora borealis was visible that night in northern New Mexico.

Study of other reports claiming to link supposed mutilations with lights or aircraft in the sky produced no evidence to justify any connection.

One incident, widely publicized in July 1978, concerned a white powdery substance found on the roof of a pickup truck near Taos and associated in one front-page news report with both mutilations and a reported UFO—"a bright orange light." The report called it "startling and baffling" new evidence and strongly implied that the powder may have been dropped by a UFO. In early 1980 Rommel obtained a sample of this substance and had it analyzed by the FBI laboratory. It turned out to be a "white enamel paint, typical of an acrylic latex/emulsion-type exterior house paint," hardly the likely chemical dropping of an advanced extraterrestrial civilization.

K Frazier

Rommel "No mystery"

Rommel also found "not a shred of evidence" to support the government-conspiracy or cult-activity theories. He concluded that natural predation accounted for all his cases and probably all those reported earlier. "My mutilations, like all the rest, can be attributed to the greatest phenomenon of all, Mother Nature acting in her role as the world's greatest ecologist."

He found a strong desire by some writers, ranchers, and even law officers to embrace highly exotic theories, in contrast to the evidence. He recalled a statement by one pro-mutilation rancher that if the coyotes are doing it, they're

doing it with knives. Answers Rommel: "I say that if surgeons are doing it, they're doing it with their teeth."

His study reinforces the conclusions of University of South Dakota sociologist James R. Stewart, who subtitled his study of the cattle-mutilation phenomenon published in this journal three years ago "an episode of collective delusion" *(SI,* Spring/Summer 1977).

Rommel's 297-page report documenting his conclusions was issued in July. A limited number of copies are available to the public. (See "Some Recent Books," page 79, for details.)

Rommel thinks the study was worthwhile and he hopes it will help put a stop to "some of the wild statements." But his report will recommend that not one more penny of taxpayers' money be spent in this regard, with the possible exception of having social scientists investigate why people believe in "cattle mutilations." (One anthropologist is now studying the connection between cattle-mutilation reports and proneness to superstition in northern New Mexico, where many of the traditional residents still believe in witchery.) "They'd have a field day," Rommel said.

—*Kendrick Frazier*

The Jupiter noneffect

In the six years since publication of *The Jupiter Effect,* this theory has been strongly criticized by scientists and firmly latched onto by doomsday cultists. Now you can forget all that. As had been frequently pointed out all along by numerous scientists, the complicated chain of reasoning that led to a prediction of a catastrophic California earthquake in 1982, due supposedly to a planetary imbalance in the solar system, is wrong.

That word comes from not another critic but from an even more notable source: the coauthor of the theory, John Gribbin. "I have bad news for doomsayers," Gribbin says in a report titled "Jupiter's Noneffect" in the June 1980 *Omni.* "The book has now been proved wrong; the whole basis of the 1982 prediction is gone. I should know. I was coauthor, with Dr. Stephen Plagemann, of *The Jupiter Effect.*"

"Because of the way the book has been misused by cultists who must never have read it, I want to make it clear that there is no reason now to expect any unusual seismic disturbance in 1982 from the causes given in the book." This doesn't rule out the possibility of a big earthquake in California in 1982 (seismologists have said for years that one is overdue). "But if you want an astrological prediction," says Gribbin, "I am afraid you are going to have to ask someone else."

Gribbin, an English astrophysicist, has been for several years a prolific full-time writer on topics at the frontiers of the geophysical sciences. His work has appeared in many books and in frequent articles in *Nature* and *New Scientist.* He has always been a highly speculative writer, but many scientists considered that with the Jupiter effect theory he ventured beyond the bounds of reasonable scientific speculation into unsubstantiated theorizing and sensationalism.

Gribbin now seems to agree. "In retrospect, some of the accusations that our book was alarmist seem justified. I am older now and, I hope, wiser. I would certainly not present the same material in the same way if the idea had just occurred to me."

The theory he and Plagemann presented was based on a series of hypothesized geophysical connections, each of which is considered to be, at best, a highly speculative idea with little confirming evidence. The idea was that a distribution of all the planets within a

95° arc on the same side of the sun in 1982 would create tidal effects on the sun, causing an increase in sunspots, causing an unusual increase in released solar particles, causing changes in the earth's atmospheric circulation, causing a change in the earth's spin rate, causing unusually large earthquakes.

But as Gribbin now acknowledges, the sun's well-known 11-year cycle of activity increased rapidly in 1979 and apparently reached its peak in early 1980, two years *before* the 1982 planetary distribution (which is hardly the straight-line "alignment" cultists wrote about anyway). In other words, the sun, acting pretty much on schedule, failed to cooperate with the Gribbin-Plagemann idea by peaking its activity in 1982 as they had expected. That's what Gribbin says changed their minds.

"Plagemann and I definitely got the year wrong. On this evidence, there is every prospect that 1982 will be quieter in seismic terms than 1979 or 1980."

The real problem was that the two writers had plunged headlong into a set of complicated, controversial subjects with all the delicacy and finesse of a dinosaur in a chemistry lab. They failed to appreciate or emphasize the enormous uncertainties at each link of their complicated chain of hypothetical connections. Just one of those required links, a significant effect of solar activity on the earth's lower atmosphere, has been the subject of research and speculation for a century, but there is still little agreement on it among scientists. The history of that quest alone is littered with discarded hopes and theories.

"There's an important lesson here, which may be what our academic critics were trying to tell us," Gribbin concludes in his report in *Omni*. "Don't open the door for half-baked cults to latch on to your ideas. The key words *earthquake*, *planetary alignment*, and *1982* were all that the weirdos needed and all they ever knew about the Jupiter effect.

"Don't believe anything you hear about 'scientific' forecasts of doom without reading the original. If anyone tries to warn you about the Apocalypse coming in 1982, just tell him that that old theory has long since been disproved."

—*K.F.*

1979: It wasn't a good year for psychics

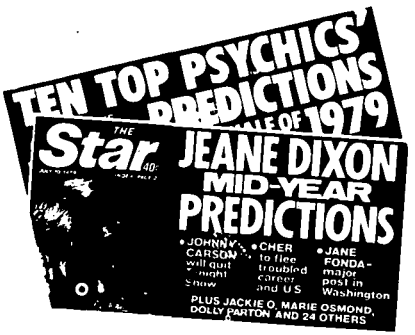
At the start of every year America's leading psychics and astrologers make their prognostications for the coming year. For several tabloids this is a first-rate media event guaranteed to increase sales. But how often does anyone bother to check back to see just how well the psychics really did? Not very frequently as far as I can tell. So I decided to see how reliable the prophecies made in the *National Enquirer* and the *Star* were for the year 1979.

The prophecies fall into two groups. The first consists of 12 predictions about which 100 of the country's "most gifted seers" expressed their opinions (see Table 1). Altogether, they made a total of 810 individual predictions. Concurrence among psychics on these 12 questions varied from 86 out of 100 who saw us all living longer lives, since aging would be brought under control this past year, down to only 32 of the 100 who believed Princess Grace would leave Monaco to resume her movie career in the United States.

Of the 12 questions to which the 100 psychics responded, I would consider that only the following two were correctly predicted: (1) Billy Carter would continue to embarrass brother Jimmy (85), and (2) Edward Kennedy would announce his candidacy for the

presidency (50). Of course at this point you may be asking: "Did you have to be psychic to make those predictions? Weren't those pretty obvious guesses?" You must be reading my mind; but we will get back to that question later.

Certainly, some of the 12 predictions for 1979 are vague enough that an evaluation of them could be considered a matter of opinion. For instance, 55 of the psychics said that the White House would be rocked by a major scandal.


TEN TOP PSYCHICS' PREDICTIONS
Star
JEANE DIXON
MID-YEAR
PREDICTIONS
• JOHNNY CARSON will quit
• CHER to flee troubled career and US
• JANE FONDA- major post in Washington
PLUS JACKIE O, MARIE OSMOND, DOLLY PARTON AND 24 OTHERS

Was it so? Well, Hamilton Jordan was accused of using drugs, and Billy Carter was questioned by a grand jury about financial aspects of the Carters' farming enterprises. But the Carters were exonerated of any wrongdoing, and Jordan is still at the White House. So my response to that prediction is that the White House was not rocked by a major scandal in 1979.

Altogether, then, I would consider that the psychics were correct in only two of the 12 predictions, for an accuracy of 16.7 percent. If we consider that there were a total of 810 predictions but that only 135 (85 plus 50) were actually correct, then the accuracy still is only 16.7 percent. Not very impressive either way.

The second group of prophecies consists of 39 separate predictions, each made by at least one psychic. The total number who believed each of these events would transpire was not indicated. In evaluating these prophecies, it was necessary to use three categories: correct, incorrect, and undetermined. The third category was added because I was not able to determine if three of the predictions came true. These three, which accounted for 7.7 percent of the total, were: (1) an attempt would be made on the life of Anita Bryant, (2) Elizabeth Taylor would be hospitalized with pneumonia, and (3) between April and June 1979 the government would run into problems making social security payments.

Now my friends tell me that Elizabeth Taylor has had pneumonia before and may well have it again; likewise, most believe that occasional threats have been made against Anita Bryant; and certainly the government has had trouble with social security funds. However, we could not verify among ourselves, nor could I confirm in *Facts on File* (a weekly news summary I used to check on past events), that these things ever did occur.

Of the remaining 36 predictions, only 3 appear to have been correct. These were: (1) gasoline would hit $1 a gallon, (2) Chris Evert would marry, and (3) Sean Cassidy would marry. This is only 7.7 percent correct. Again, not very sagacious. Even if the three predictions I am not certain about all transpired, the total correct rises to only 15.4 percent, still not a very impressive showing. Then consider the quality of the correct predictions. Hardly anything worth getting excited about; rather trivial at best.

The 84.6 percent of the predictions that were incorrect are interesting nonetheless. Remember 1979? That was to be the year that vast deposits of oil would be found in Arizona and New Mexico, making the energy crisis a thing of the past; cures would be found for arthritis, baldness, and heart disease; a new planet would be discovered;

Johnny Carson would retire; President Carter would be rocked by a scandal over Red China; Marie Osmond would marry; a Mideast peace treaty would not be signed; Brezhnev and Tito would die; real estate prices would steadily decline throughout the year; and the ERA would probably be signed. A great year wasn't it?

A few predictions came close. One psychic, for instance, predicted that an earthquake would hit California in March. This psychic was living in California and surely knew that California has frequent earthquakes, probably at least one a month somewhere in the state. But, since the major California earthquake of the year (5.9 on the Richter scale) hit in August south of San Francisco, I counted this an incorrect forecast.

Another close call was that Pope John Paul II would visit the United States in August. It was in October. Psychics seem to gain little by predicting specifically when something will happen. Apparently realizing this, none of them even tried to predict the day or the hour that an event would occur.

In light of all the incorrect predictions made for 1979, it is interesting to review some of the major events that did occur. I would expect anyone with valid powers of precognition to have gotten at least some of them: American embassy in Iran seized (November);

TABLE I

1979 in Review: The Year as It Was
Supposed to Have Been According to 100 Top Psychics

(Number of psychics making each prophecy is in parentheses)

Longer lives will be had for almost everyone as aging is brought under control. (86)

There will be a major breakthrough in cancer, which will almost totally wipe out the disease. (85)

There will be an astonishing spiritual rebirth and a return to the old values. (85)

Billy Carter will continue to embarrass Jimmy. (85)

A dramatic strengthening of the family unit will occur. (82)

Contact will be made with aliens from space who will give us incredible knowledge. (81)

America will enter an incredible golden age before the end of the year. (72)

The White House will be rocked by a major scandal. (55)

Frank Sinatra will become seriously ill. (53)

Edward Kennedy will announce his candidacy for the presidency. (50)

Burt Reynolds will marry. (44)

Princess Grace will return to the USA to resume a movie career. (32)

Chinese invade Vietnam (February), Three Mile Island disaster (March); killer tornado strikes Wichita Falls and vicinity—60 died (April); Salt II signed (June); Skylab comes down (July); Andrew Young resigns (August); and a plane crash in Chicago kills 275 (May). But none of these events were foreseen by any of the 100 "most gifted psychics."

From this review, we can summarize the major characteristics of psychic predictions. These can serve as a guide for formulating predictions of our own if we desire to try our hand at being psychic. First and foremost, be as vague and general as possible. "Cancer will be cured in 1979" was an excellent example. The exact time, place, or person discovering the cure was not specified. Unfortunately, the prediction was wrong; but it is made every year and sometime someone will get it right. The fuzzier the prediction, the greater the chance of being correct.

Second, keep up with current events to make "safe" predictions. Dollar-a-gallon gasoline, Edward Kennebid for the presidency, and Billy Carter's embarrassing Jimmy were all safe bets at the end of 1978.

Third, a good prediction should be optimistic and cheerful. Announcing medical cures, the end of inflation or the gas crisis, spiritual rebirths, marriages, and the entering of a golden age all make good copy. No one likes a gloomy future. Incidentally, if you have to be negative, do so about someone most of your readers are not very fond of: "Leonid Brezhnev will die from natural causes in September."

With a little practice using these guidelines, you could be on your way to a new career as one of those gifted seers who can alleviate some of the fear and malaise of our uncertain future. However, if you choose this path, I predict that your predictions will usually be incorrect. For, as I have pointed out, another characteristic of psychic predictions is that they are usually wrong, by a margin of about 5 to 1.

—James Cunliffe

UFOs: Point of information

The San Francisco Regional Mensa newsletter indicated that the April 1980 monthly gathering would feature "nuclear physicist Stanton T. Friedman, with an illustrated lecture titled 'Flying Saucers *Are* Real.'" I attended.

After listening to Friedman tell of 80,000 reported sightings and seeing his slides presenting charts and "actual pictures of UFOs," I asked only one relatively simple question: "With 80,000 reported sightings, a gentleman named Philip Klass has made an offer of $10,000 for certain scientific proofs of *just one* extraterrestrial spacecraft [to any party who agrees to pay him $100 a year—not to exceed a total of $1,000—until such proof is provided]. You apparently thought that this was fair, because I understand you took him up on it some years ago. Could you please tell us the present status of that offer?"

Friedman acknowledged the correctness of what I said. He said that he has been paying Klass $100 each year for about five years. He then went on to state that while he's paying it is costing Phil Klass nothing.

I pointed out: "You both risked. It's costing only you money because you're losing the bet. Nobody has yet to come up with one scientifically proven case."

Friedman then turned his attention to other members of the audience, responding to their questions with additional "proofs and facts" about the existence of many extraterrestrials scampering about our planet Earth.

—Robert A. Steiner

Smorgasbord of the paranormal

Following the lead of Prentice-Hall (*SI*, Summer 1979, pp. 12-13) but going one step further, Aquila Publishing Ltd., of Montreal, Quebec, has published a smorgasbord of French-language schoolbooks on the paranormal, only this time the intended audience is students in grades 6 to 9.

True, the 11-page Aquila catalog advertises readers on other subjects and for other levels of education. But on page 3 are listed—at $2.75 each—such paperbacks as *Les O.V.N.I.* ("The UFOs"), *Le Retour des O.V.N.I.*, *Le Mystere du triangle des Bermudes*, *Les Iles fantomes*, *Sasquatch: legende ou realite?*, *Les Dragons de Lacolle*, *Les Gamiens arrivent*, and *Mission S-14*, all by authors G. R. McConnell and Y. Bouchereau (whose credentials are not mentioned).

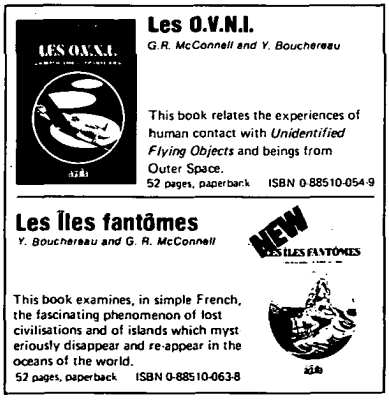
Why does this educational publisher offer so many readers on one narrow subject, especially the paranormal, for grades 6 to 9? To "afford the student the opportunity to read in clear, uncluttered French about stimulating topics of current interest."

The language may be uncluttered French; the contents (and the intentions of the publisher) are not. While two of the eight readers listed on page 3 are fictional works, the other six are strictly pseudoscience. For instance, the annotation for the "Bigfoot" book reads: "Is there such a creature as Bigfoot, a manape roaming the wilderness of the West Coast. This book examines the evidence and leads the reader to some startling conclusions."

It seems clear that Aquila would like to lead all French-language students of North America into its version of the mysteries of the paranormal.

—Elmer Kral

Elmer Kral is co-chairman of the CSICOP Education Subcommittee.


LES O.V.N.I.
Les O.V.N.I.
G.R. McConnell and Y. Bouchereau
This book relates the experiences of human contact with *Unidentified Flying Objects* and beings from Outer Space.
52 pages, paperback ISBN 0-88510-054-9
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LES ILES FANTÔMES
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52 pages, paperback ISBN 0-88510-063-8

Two of Aquila's school readers

Assessing supposed mysteries: A laudable guide for students

In these pages, we often criticize other publications for what we consider poor handling of the paranormal. It is a pleasure when we feel we can offer some strong words of praise.

Deserving just such commendation is *Scholastic Voice*, a biweekly of Scholastic Magazines, Inc., distributed nationally to high school English and language-arts students and their teachers. The magazine's special issue of April 17 was devoted entirely to critical thinking about supposedly "true" mysteries.

A four-part report was led by Assistant Editor Michael David Quinn's article, "Those 'True' Mysteries—and What's Behind Them," which calmly presents a series of claims as they were originally portrayed by their proponents and then gently introduces the student to some of the actual facts that cast a considerably less mysterious light on the topic. He includes Baltimore's would-be psychic Mark Stone's sports predictions (*SI*, Summer 1979), the Amityville "Horror," the Bermuda Triangle pseudomystery, and some UFO

reports. Afterwards he provides some excellent items of advice to students for evaluating any other books, movies, and TV shows touting "true" mysteries that they may encounter. This issue of *Scholastic Voice* also contains a fun test of the student's critical thinking, based in part on a Sherlock Holmes story, that asks students to consider how Holmes would have used his reasoning abilities to examine some of today's "true" mysteries.

The teacher's guide to pseudoscience and critical thinking that accompanies this special issue provides questions to stimulate student discussion about assessing offbeat claims, suggests student projects, and gives a guide for further reading. All in all, a fine effort.

—*K.F.*

The Uri "bent spoon" award

The Uri Awards

James Randi announced his first annual Uri awards at a news conference in New York City on, appropriately enough, April 1. Recipients were notified of the honor by telepathy and were, as Randi said, "free to announce their winning in advance, by precognition, if they so desired." The award consists of "a tastefully bent stainless-steel spoon with a very transparent, very flimsy base."

For those whose ESP was not operating that day, here are the winners:

Academic category. "To the scientist who says the dumbest thing about parapsychology": Professor William Tiller of Stanford University, "who declared that even though the experiments of the parapsychologists and the experimenters themselves may be subject to doubt, there is so much evidence produced for the paranormal that the sheer volume indicates there is something there, regardless of the poor quality of the data." Randi has dubbed this the "Tiller effect."

Funding category. "To the funding organization that awards the most money for the dumbest things in parapsychology": James S. McDonnell's McDonnell Foundation. The foundation gave $500,000 to Washington University, in St. Louis, to investigate psychics, and according to a parapsychologist at the university "it was to be devoted primarily to the investigation of children who bend spoons and keys."

Performance category. "To the psychic who takes in the most people with the least talent": Philip Jordan, "a conjuror who does the table-tipping trick and was appointed an officer of the court in Binghamton, N.Y., to assist defense attorney Robert L. Miller in selecting jurors according to the color of their 'auras.' "

Media category. "To the news

organization that supports the most outrageous claims of the paranormalists": Prentice-Hall and American International Pictures, "who sold the public the 'true story' of *The Amityville Horror* via 15 hardcover printings, millions of paperback sales, and a highly successful motion picture. It was a fabrication based upon the barest of evidence and perfectly ordinary events."

There were many other deserving nominees, Randi said. It was a shame that they all could not be honored. In the academic category, for instance, the American Society of Dowsers declined a request from *Omni* magazine to conduct tests of whether the claims of dowsers were valid. The Society said that tests done in France in 1913 had decided the matter and that no further proof was needed. Also nominated were David Weltha, the teacher of reincarnation and aura-reading at Iowa State University; Cyrus Lee, of Edinboro State College, who returned from a trip to China telling of priests who "get a corpse to walk . . . the corpses look like they are jumping or hopping"; and Philip Singer, of Oakland University, in Michigan, who sponsored a psychic surgeon from the Philippines and then ensured that conditions for observing the performance were poor.

In the funding category, the CIA financed (the amount was undisclosed) attempts by spirit mediums to contact the ghosts of deceased Russian and American spies and to influence the Kremlin by psychic powers.

Other nominees in the performance category were Jeane Dixon; Pat St. John, the Connecticut psychic who predicted Niagara Falls would collapse on July 22, 1979; and Syuri Tanaka, a 10-year-old Japanese girl who, it was claimed, could pour tea while blindfolded and see with her nose!

In the media category, NBC-TV received two Uri nominations, both, alas, in a losing cause. One was for its two-part presentation of the "curse" of King Tut, "which distorted the facts and made countless exaggerations and numerous errors in order to sell the fictitious curse." The other went to the NBC News report in November 1979 that a Texas man had invented a perpetual-motion machine, which, said NBC, generated 4,000 watts of electricity. Two weeks later a man in Temple, Texas, was arrested by the FBI for selling $800,000 worth of stock in essentially the same device.

Randi is already soliciting nominations for next year's Uri awards. He expects a rich crop.

—*K. F.*

Mummy's curse tut-tutted

The so-called curse of King Tut's tomb was a fake worked up to protect the tomb's treasures, the last surviving member of the 1922 expedition that discovered the tomb disclosed earlier this year. Richard Adamson, who was a security officer and slept in the tomb after it was breached, said the story that anyone who violated the tomb would die was cooked up by Howard Carter and Lord Carnarvon, who headed the expedition, to frighten off anyone who had thoughts of robbing the tomb at night. "We allowed the story of the curse to circulate because it helped with security at night," Adamson said. "I had to sleep in the tomb at night for seven years, alongside the gold coffin and the mummy."

Adamson related his story in a letter to Harlech Television in London, which had just completed a $3.5 million fictionalization, "The Curse of King Tut." The TV show treats the curse as real and was telecast in the United States by NBC-TV in May.

—*K. F.*

Ma Bell is a Gemini

The ad above, placed in the *Washington Post* by Chesapeake & Potomac Telephone, raises only one question: Do A T & T's executives, and perhaps even Bell Labs' eminent scientists, call Horoscopes-By-Phone each morning to plan their corporate duties?

Perhaps they do. Pacific Telephone distributed the circular below to

its customers, telling how one of its men uses dowsing rods to find underground cables.

Quackery on display

Although it sounds vaguely like the type of roadside attraction one might encounter on Route 66 somewhere between Needles and Barstow, the National Museum of Quackery is a very legitimate and, as testimony to public gullibility, a very informative enterprise.

The museum is actually part of the larger St. Louis Medical Museum, located in the basement of the Medical Society building at 3839 Lindell Blvd., St. Louis, Missouri.

During the 1964 celebration of that city's bicentennial, the museum receivedon permanent loan a massive display of medical fakes and frauds condemned and confiscated by the Food and Drug Administration. And what an incredible collection it is!

Among the many nostrums, cure-alls, and miracle machines are orgone boxes, vacuum pump breast developers, wonder gloves for treating arthritis, electric rollers for reducing ugly fat, short-wave radio receivers for treating cancer, $1,700 muscle-toning devices, copper bracelets, ion-generating lamps, chemical vaporizers for purifying air, and magnetic-ray belts for treating almost everything, plus a generous sampling of diet pills, health foods, and medicinal tonics.

What are the highlights of such a treasure trove? How about Dinshah P. Ghadali's "Visible Spectro-Color Projector," which treated diseases by bathing patients in beams of colored light? Or the "Violetta Ozone Generator," a hand-held electric flashlight with glass-tube attachments, shaped to fit every bodily nook and cranny, which transmitted "enormous quantities of ozone" into diseased organs.

Or the famous "Russian Sleep Machines," guaranteed to provide a full night's sleep in only two hours. With the "Nap-a-Night" version, a suffering insomniac climbed into bed wearing a black rubber eye-mask wired to a small storage battery. A series of weak electric shocks sent into the eyelids supposedly promoted the relaxation re-

sponse. Similarly, the "Sonus Film-o-Sonic" sent electronic pulses coursing through the body to treat cancerous tissues. In truth, the machine was merely a small metal box containing a tape recorder that played musical tunes keyed to different ailments. For example "Smoke Gets in Your Eyes" was the melody for cancer; "Holiday for Strings," cured arteriosclerosis.

The real gems of the collection, however, are examples of America's best-known and most successful medical frauds. Inspired by the great public interest in electricity and radio after the turn of the century, Dr. Albert Abrams, of San Francisco, devised the pseudomedical theory of "radionics," which claimed that "electrons" were basic biological units and all diseases were caused by the "disharmony of electronic oscillation in the body." As the self-styled dean of the College of Electronic Medicine, Abrams marketed his "Reflexophone" on the principle that every disease had its own specific "radio wave length" and could be cured by transmitting this frequency back into the body. His companion device, the "Oscilloclast," diagnosed these ailments by receiving the wave lengths emitted by diseased tissue. So sensitive was his machine, said Abrams, it could even detect and diagnose disease from a smear of blood sent to him by mail on a sheet of plain white paper. (One debunker sent in a drop of chicken blood and was informed by return post that he was suffering from bad teeth and sinus trouble.)

Abrams spawned a host of disciples and imitators; indeed, all the various pseudomedical electonic devices—including many on sale today—are direct descendants of his "black boxes." Abrams died in 1924, leaving an estate of over $2 million.

Unfortunately, not all of the items above are still on public display. The original FDA exhibit has been drastically pared down to a very small selection and relegated to a "Quackery Corner" surrounded by other displays and dioramas commemorating great moments from Missouri's medical history.

Some of the most fascinating and famous medical scams are now stored out of sight in a back room. However, any serious students of pseudomedicine can call ahead to the museum's curator-director, Hollister Smith (314-371-5225), who will usually grant permission to rummage through these funny, sad, and sometimes tragic reminders of the continuing human faith in quacksalvers and snake-oil.

—James Cornell

James Cornell is director of publications at the Smithsonian Astrophysical Observatory.

In brief

• A new journal, *Creation/Evolution*, devoted to critical response to the claims of "scientific creationists," published its first issue early this summer. It is being produced in San Diego (a hotbed of creationist activity) under the coeditorship of Fred Edwords and Phil Osmon as a nonprofit venture in cooperation with the California District of the American Humanist Association. Osmon says that the idea originated two years ago, when he and Edwords were preparing for a debate with two vocal San Diego creationists and discovered a lack of appropriate material. "Most libraries carry a number of creationist books attacking evolution, but there is little or nothing published by evolutionary scientists specifically critiquing this attack on evolution or the special creation model itself. Also, there is a need for works that make the case

for evolution in a way that anticipates the creationist response." They and a network of colleagues decided a journal was the best forum. "The articles will, I hope, provide intelligent, reasoned responses to creationists, written in an easy-to-grasp style that school board members, teachers, legislators, and students can understand," says Osmon. "Topics covered will span all the stress points—philosophical, legal, and technical—pertinent to this controversy." Subscriptions to the quarterly are $8. Address inquiries to: Creation/Evolution, 953 8th Ave., Suite 208, San Diego, Calif. 92101.

• A teenage couple, obsessed with the idea of an afterlife, drove a stolen car at high speed through the concrete wall of a school gymnasium in Mercer Island, Washington. Jason Perrine, 16, was killed, and Dawn Swisher, 15, was seriously injured. According to news reports after the May 12 crash, stunned friends said they had all jokingly discussed a fantasy of committing suicide in exactly that manner but didn't think any of them had taken it seriously. The friends said that they had all begun talking about reincarnation months earlier, after Dawn had read Richard Bach's book *Illusions*, and had talked about crashing sports cars into their old junior high school and moving on to a "higher plane of existence." "No one knew they were serious," said one friend.

• *St. Petersburg* (Fla.) *Times* reporters Bette Orsini and Charles Stafford won the Pulitzer Prize for national reporting in April for their investigation of the Church of Scientology. The Pulitzer committee noted: "Four years went by before the series began, four years of suit and counter-suit, harassment, smearing of Mrs. Orsini's husband's reputation, rifling of files, fake accidents, and finally the trial in Washington that brought convictions and sentencings."

• The *Columbia Journalism Review* (March/April 1980) noted with amused detachment the squabble earlier this year between "the sensationalist national tabloid *The Star*" and its "equally jazzy rival, *The Midnight Globe.*" It turns out that the former had sued the latter for $1 million over rights to "soothsaying columns of the Jeane Dixon stripe." Commented *CJR* publisher Edward W. Barrett: "It all recalls somehow the boyhood experience of watching two alley cats fight over a fish head."

• The results of the research on the Shroud of Turin may well be disappointing, at least to those who expect some definitive conclusions. That was the word from Ray Rogers of the Los Alamos Scientific Laboratory in late May, three months before the results of the research were to be reported. He said the reports would contain no definite conclusions on how the image on the cloth was formed. The team remained divided over the meaning of their data: "We're never going to be able to prove anything. We can only disprove theories. We are never going to be able to make a categorical statement that it is authentic and is from the resurrection." Rogers said the team's final reports would rank hypotheses in order of probability and that people would have to make their own conclusions.

—*K. F.*

Psychic Vibrations

UFO exploiter extraordinaire Timothy Green Beckley ("Yes! Aliens walk among us . . .") has done it again. A recent ad promoting his new book, *Strange Encounters*, is headlined "Forced into *Sex* Aboard a Flying *Saucer*," and states: "A Canadian woman is found wandering nude in a park and claims she was abducted by space beings and taken to the back of the moon where she was 'implanted with outer-space semen.'" In this book, " one New York woman tells of her 'cosmic union' in great detail," Beckley promises. When Beckley is not busily engaged in UFO research, he reviews X-rated movies for *Hustler* magazine

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Meanwhile, a peasant farmer in Mexico claims to be growing onions the size of bowling balls and cabbages the size of manhole covers. His secret? Outer-space aliens, he says, have given him a "magic" formula for growing super-vegetables. He says he got the secret formula from a "humanoid" creature who claimed to have been held captive by aliens in the interior of an inactive volcano. The story of the farmer, Jose Carmen Garcia, has appeared in such publications as the *Midnight/Globe* and the *Weekly World News*. He is said to have grown three times as many tons per acre as Mexican government scientists produced under carefully controlled conditions. When did Garcia make this astounding discovery? The year was 1947. No one seems to have noticed his achievement until this past year.

* * * * *

The science of "astrometeorology" has suffered another spectacular defeat. Joseph Goodavage, well-known writer on paranormal subjects and "space mysteries," has predicted that in the 1980s the United States will endure "the most devastating series of winters in recorded history." But before these disastrous winters strike (with snowdrifts of 17 to 27 feet in many major cities), Goodavage predicted last fall, "a series of earthquakes—some in areas not normally considered earthquake-prone—will begin following the vernal equinox of March 20, 1980." Why was this going to happen? "A solar eclipse at 26 degrees of Aquarius on February 16, 1980, is opposed and squared—both adverse aspects—at the March 20 vernal equinox by Uranus at 25 degrees Scorpio, squared by Mars at 27 degrees Leo, and also squared by the moon at 21 degrees Taurus." What all this supposedly proved was that the "great disasters" of the 1980s were to begin in California in early April of this year.

Specifically, "the date and time for the first great earthquake to strike the Palmdale Bulge area of California will be close to 2:17 A.M., April 4, 1980." (This was published in the December 1979 *UFO Report*, on the newsstands last October.) At last report, California had not yet fallen into the sea.

* * * * *

Well-known UFO contactee-psychic Ted Owens claims to be able to guide hurricanes, cause fires, and bring floods, rain, snow, and heat, owing to his special extraterrestrial contacts. When Owens's claims were reported in his letter published in *Fate* magazine (December 1979), a *Fate* reader in Nova Scotia, Stan Farnsworth, wrote to Owens asking him to please bring mild weather to that province, where they reportedly have the highest heating costs in Canada. In a letter in the June issue of *Fate*, Farnsworth complains that Owens never even answered his letter and, worse yet, "we have had our usual cold winter and lots of ice and snow." Where are the space people when they're needed?

* * * * *

More evidence that America is falling ever further behind the Russians in psychotronic technology: The tabloid *Star* reveals that "Soviet scientists are reported to have found a cheap way of converting lead into gold, sparking fears that Moscow might be able to make a 'killing' on the world market at the West's expense." Another tabloid, *Midnight/Globe*, reports that the Soviets have "now perfected the technique to make gold for about $600 an ounce." When these stories appeared in print in early February 1980, gold was selling for about $680 an ounce. But almost immediately afterward, the price of that metal began plunging and was soon selling for just $500 an ounce. What more proof could be needed?

* * * * *

All students of psychic phenomena are well aware of claims that plants can telepathically sense human thoughts and emotions (the "Backster effect"), but a Japanese electronics expert has discovered that plants can also talk, sing, and do mathematics as well. Ken Hashimoto is, according to the *National Enquirer*, the inventor of a "psychic radio," which transforms the sounds made by plants into Japanese vowels. Dr. Hashimoto reports: "I had my wife sing Japanese songs to the plant, and before long it—through the machine—sang right along with her." A new era in interspecies communication began when Mrs. Hashimoto asked a precocious cactus to add two and two. It made four sounds, witnesses report. That's one small step for a cactus, a giant leap for plantkind!

* * * * *

Midnight/Globe reports startling proof that psychic healing really can cure the dying. The well-known psychic researcher Thelma Moss tested the powers of some of the world's most formidable psychic healers in a 7-year experiment. "Out of 300 volunteers, 75 patients said psychic healing made them feel better," she stated. Another researcher offered as proof that "Olga [Worrall] only focuses her psychic energy on them for 30 seconds, and the patients weren't told which 30 seconds it would be." "Exactly how the process works is a mystery," Moss explained, "except that the cure comes in changing a person's energy field by interacting with the aura of the psychic."

* * * * *

Some ads found in a recent issue of the popular tabloid *National Examiner:* "$1,000 *guarantee* I will curse your ene-

mies, known or unknown, in 3 hours. Total cost, $20.00." "Powerful Voodoo doll gets revenge! Conjure instructions, pins $5.50." "Voodoo Magic. Only Doctor Zenda can guarantee revenge, money, love in 13 hours. Cannot fail. $5.00."

* * * * *

The well-known "ancient astronauts" theorist Stuart W. Greenwood speculates in a recent letter in *UFO Report* that the Soviets invaded Afghanistan not for geopolitical considerations but because of the supposed "Afghanistan Triangle," one of the "12 Devils' Graveyards Around the World" identified by the late Ivan T. Sanderson in 1973.

* * * * *

The tabloid *Modern People* is offering for sale, for a mere $9.95 (plus postage and handling), a post-mortem record made by Elvis Presley: "The king lives on and talks to the world from beyond the grave . . . Hear Elvis describe the strange world in which he now lives and reveal startling facts about the mysterious, unearthly beings who dwell among us!"

* * * * *

Lydia Stalnaker, who lives in Jacksonville, Florida, claims to have been abducted by beings from a UFO a few years back and says that she was "implanted" with the personality of Antron, a female alien thousands of years old who is visiting from "another galaxy" and currently resides in a glass tube on board a spacecraft in the vicinity of Earth. Antron also claims to have psychic powers and says that she's a modern-day Moses: "I'm here to lead the righteous to a new world in another galaxy." James Harder, professor of engineering at the University of California at Berkeley and director of research at APRO, a major UFO group, hypnotized Stalnaker, and endorsed the accuracy of at least some of her claims. Stalnaker is now taking out full-page ads in various publications offering for sale "The Cross of Antron--the universal Life Force surges out from it in powerful waves of energy." "I have met people from another galaxy," the ad claims. "I have received the gift of healing." She states in the ad that "Dr. James Harder, director of research at the prestigious Aerial Phenomena Research Organization and a member of the *National Enquirer's* Blue Ribbon UFO Panel has said publicly that my story is true 'beyond a reasonable doubt.'" The reader is encouraged to "share in the power of this amazing cross" for just $7.95 (plus 65¢ for postage and handling). When shown the ad, Harder deplored the commercialization and emphasized that he had endorsed the reality of only part of Lydia's story.

* * * * *

Poor Svetlana Godillo. She was a victim of poor astrological timing. This Washington, D.C., astrologer devoted a full column, published in the March 16, 1980, *Washington Post*, to whether Gerald Ford would run for President. "Astrologically, on the basis of his and his wife's charts, I say that most probably he will enter the race." Unfortunately, Ford's decision not to run had been announced one day earlier.

—*Robert Sheaffer*

The Velikovsky Affair

Part I

Ideas in Collision

James Oberg

In the past, revolutionary theories have "turned the world upside down" only metaphorically, but in the case of the writings of the late Immanuel Velikovsky, these words should be taken quite literally. Velikovsky and his followers claimed that they had identified a series of ancient interplanetary cataclysms, during which entire worlds somersaulting in space were involved in disastrous near-collisions. These events involved the planet Earth during the fifteenth and eighth centuries B.C., and memories of them, according to Velikovsky's view, survive in the mythology and folklore of nations all over the world.

Thirty years after the controversy became an issue in the public forum, "Velikovskianism" still exists, but in a form that neither its proponents nor its opponents could have imagined a generation ago. For those who were sure that his theories marked him as a new Galileo, as a genius whose vision would completely overturn the dogmas of the centuries, it would have been unthinkable that he would still be a scientific leper three decades later, his theories shunned and ridiculed by the vast majority of practicing scientists. For those who saw him as a calculating fraud, a crank, and a crackpot, it would have been unthinkable that a vigorous intellectual community would still exist today that not only embraces the world view of Velikovsky but also claims that all scientific progress since 1950 has borne out his vision and brilliance. The Velikovsky "cult" has not shown any signs of withering away as scientists imagined it would.

On the occasion of Velikovsky's death last November in Princeton, New Jersey, at the age of 84, commentators were faced with an un-

James Oberg is a computer science specialist at the Johnson Space Center in Houston and a noted space sciences writer.

answerable dilemma. Is Velikovskianism the wave of the future after all, whose day has simply been suppressed by scientific inertia and closed-mindedness? Or has it become just another dead-end of pseudoscience, one of the best case studies in "pathological science" to come along in this century? There are advocates of both views; but, although it's impossible to write the last chapter, most outside observers lean to the latter judgment.

The origin of this fascinating interplanetary-catastrophe theory lies with a man whose life story is fascinating in itself. Born to a Jewish family in Vitebsk, Byelorussia, on June 10, 1895, Velikovsky (whose name in Russian means "the great") was a brilliant young scholar who, after finishing high school in 1913, spent a year traveling in Europe and Palestine. After taking a few preparatory medical courses at the University of Edinburgh, he returned to Russia in the summer of 1914. He went through the horrors of World War I, the Bolshevik Revolution, and the subsequent civil war while a medical student at the University of Moscow. After graduating in 1921, Velikovsky made his way to Berlin, where he met and married a young concert violinist. After working with several psychiatrists in Vienna, he emigrated with his family to Tel Aviv, Palestine, and in the summer of 1939 to New York City, one step ahead of World War II and the anti-Semitic insanity of Nazi Germany.

For the second time in Velikovsky's life the world was engulfed in mass murder, and he turned to ancient myths for intellectual refuge. By the spring of 1940, as Nazi armies smashed into Paris, he had outlined the thesis that would consume his energies for the next 40 years. "I felt," he later recalled, "that I had acquired an understanding of the real nature and extent of that catastrophe." By the fall of 1940, as Nazi warplanes decimated the British Royal Air Force over London and nothing seemed to stand between Hitler and world domination, Velikovsky completed his story of planetary catastrophes, beside which even world war and genocide paled to insignificance. He spent the next nine years perfecting the documentation, during which time (in his own words) he daily "opened and closed the library at Columbia University."

Velikovsky had created an intricate ballet of celestial encounters that repeatedly devastated the earth (he called his work a "reconstruction" rather than a "theory"). Venus was one of the key planets, having sprung from Jupiter during a close encounter with an errant Saturn. The newborn world of Venus was enveloped with gases and appeared as a comet, periodically swinging deep into the inner solar system. After a few hundred, or a few thousand, years, Earth's luck ran out, and it nearly collided with "comet" Venus. The resulting series of disasters and near-collisions caused the parting of the Red Sea, the plagues of Egypt, the fall of the walls of Jericho, and the "sun standing still" over Gideon—such is

the "reconstruction" of Velikovsky. Venus, meanwhile, while settling into a more peaceable orbit, knocked Mars off course; the Red Planet, in turn, made a series of equally devastating visitations seven centuries later.

And all this constituted only the final act in a drama that Velikovsky envisaged as going back thousands of years. Earlier, he wrote, Mercury, too, had been involved in planetary encounters; Jupiter and Saturn had been double planets, and Earth had been a satellite of one of them; Saturn had exploded, showering Earth with the waters of the Deluge; the moon had come in from somewhere and had somehow been captured by Earth. All of this was supposed to have occurred "within the memory of man."

In *Worlds in Collision*, Velikovsky laid out this reconstruction. Published in 1950, it was preceded by a publicity campaign involving excerpts and summaries that aroused a great deal of popular excitement before the book appeared. Many scientists assumed it was a hoax designed to prove that the Bible was literally true; and since Macmillan brought out the book through its *textbook* division, the scientific community reacted violently, threatening boycotts and other retaliations. Macmillan passed the rights to Doubleday, even though the book was on its way to becoming a nationwide best-seller. Widely acclaimed by the news media as a new Leonardo da Vinci, Pasteur, Galileo, and Einstein rolled up into one, Velikovsky was denounced and vilified by practicing astronomers—and he returned the feelings.

Fans of Velikovsky made much of his rejection, claiming that it was a symptom of the fossilized nature of scientific neanderthals who would never be able to change their minds about anything. In *Harper's* magazine in June 1951, Velikovsky wrote that the older generation of scholars "are for the most part psychologically incapable of relearning." (This comment was completely negated by the next 20 years of science, in which hard evidence in a dozen fields led these same scientists to change their minds many times—except about Velikovsky!) "How Much of Yesterday's Heresy Is Today's Science?" demanded a headline in a pro-Velikovsky journal in 1972, obviously implying that past heresies automatically became future science. This was a counterfeit debating trick that ignored the fact that most heresies were actually true nonsense, although the converse (today's science is yesterday's heresy) *is* correct. All the crackpot "science heresies" of the past were ignored, and only the success stories were described, leading to a blatantly illogical claim.

In fact, Velikovsky *did* have his antecedents, however much his followers refused to face up to such previous analogues. In three separate cases, lengthy books had chronicled ancient legends as proof of interplanetary catastrophes, often with uncanny parallels to Velikovsky's reconstructions. Yet, although Velikovsky must have read these books

(they were available at the Columbia library) and used them as source materials, no mention of them has ever been made in his writings—perhaps because their authors have been totally discredited as crackpots. But they had not been forgotten by many of Velikovsky's critics, who saw him as only another spiritual successor to previous crank theorists.

The first was William Whiston, a British clergyman and mathematician, who in 1696 published *New Theory of the Earth.* In it, Whiston claimed that before Earth's disastrous encounter with a comet, there were exactly 360 days in a year and 30 days in a month (Velikovsky claimed this as well). The comet came by in 2349 B.C., causing the Noachian flood and the changing of the earth's orbit. Whiston found extensive evidence to support this theory, based on worldwide legends.

In 1882, the American politician-reformer-editor-novelist-crank Ignatius Donnelly published *Ragnorak*, in which he used 200 pages of widely circulated myths to reconstruct a story of a comet causing a worldwide catastrophe, including the sun's standing still over Gideon (Velikovsky also accounted for this by means of the passage of a comet). The critiques of *Ragnorak* sounded strangely like premonitions of the reception of Velikovsky's books 70 years later: according to one commentator, Donnelly's theory was "coherent in all its parts, plausible, not opposed to any of the teaching of modern science, and curiously supported by the traditions of mankind. If the theory is true, it will revolutionize the present science of geology."

The third recycling of this extraterrestrial catastrophe concept was the Hoerbiger-Bellamy "World Ice Theory." First published in Germany in 1913 (Bellamy took over the movement in the 1930s), it was, in the words of Martin Gardner, "one of the great classics in the history of crackpot science." In this case, it was falling moons, not comets, that had caused all of the world's legendary disasters. The theory took an ominous turn in Germany, where it provided ammunition for the Nazis, in the form of dozens of popular books and magazines that made believers out of millions of people whose rejection of "Jewish science" was manipulated by the Hitlerites into political power. Bellamy's books published in English did not have such a taint and were pure crackpottery, telling how a former moon of Earth had crashed into the planet some 13,500 years ago, being soon afterwards replaced by the current moon (which Velikovsky agreed was indeed captured at about that time). Although Velikovsky claimed that the moon was once covered with water that has since disappeared, the Bellamy books claimed that the moon still had layers of ice more than a hundred miles thick.

Velikovsky obviously did not see his work as in any way related to these earlier versions of the space-disaster theory. Indeed, he singled

himself out as the one and only person capable of such a reconstruction: "Like the early memory of a single man, so the early memory of the human race belongs in the domain of the student of psychology. Only a philosophically and historically, but also analytically, trained mind can see in the mythological subjects their true content—a mind learned in long years of exercise to understand the dreams and fantasies of his fellowman." It is strange that he was able to claim such a uniqueness, since he must have known that it was only in the details, not in the concepts, that his ideas differed from those of Whiston, Donnelly, Hoerbiger, and Bellamy. But he had good reason, as we have seen, for portraying himself as the *originator* of these theories and for neglecting to draw attention to his predecessors.

As the years passed, Velikovsky claimed a series of important "successful predictions" based on his world view; such predictions vindicated him, or so he and his followers insisted: "Seldom in the history of science have so many diverse anticipations—the natural fallout from a single central idea—been so quickly substantiated by independent investigation," wrote one of his chief disciples, Ralph Juergens, in 1963. "The space age gave my views a record of confirmations," Velikovsky himself claimed in 1977. His detractors called these predictions "guesses," and not particularly good ones at that.

Chief Velikovsky critic Carl Sagan, for example, told a conference in 1974: "To the best of my knowledge, there is not a single astronomical prediction correctly made in *Worlds in Collision* with sufficient precision for it to be more than a vague lucky guess, and there are . . . a host of claims made which are demonstrably false." In 1979, NASA space scientist David Morrison elaborated: "Every important prediction [Velikovsky] made in 1950 concerning conditions on the planets, such as the hydrocarbon clouds on Venus, large amounts of argon in the atmosphere of Mars, recent melting of the lunar surface, large internal heat sources on Venus, large-scale recent cratering of Earth and Moon, and synchronized planetwide volcanism on Earth have been shown decisively to be in error. Every new space mission, such as the recent Pioneer Venus probes, pounds another nail in the coffin . . . The cruel truth is not only that astronomical evidence fails to support Velikovsky, but that a great deal that seemed plausible or at least possible when suggested in 1950 has been shown to be incorrect."

Velikovsky, or course, would have none of this: "The most despicable of all ways of suppression is denying me the originality and correctness of my predictions," he told a conference at Notre Dame in 1974. That same year, speaking in San Francisco, he elaborated: "My work today is no longer heretical. Most of it is incorporated in textbooks, and it does not matter whether credit is properly assigned . . . None of my critics can erase the magnetosphere, nobody can cool off Venus, and nobody can change a

single sentence in my books."

Skeptics have suggested that the person most adept at erasing (or changing the meaning of) sentences in Velikovsky's books is Velikovsky himself. That is, many of his most famous predictions were allegedly based on reinterpretations of what he had originally written, which turned out to be false or were ambiguous enough to be reinterpreted to mean practically anything. Specific examples seem to bear out this criticism.

Take Venus, for example: Velikovsky predicted it would be giving off heat because of its short, violent history. Although it turned out to be hotter than scientists had guessed (mainly due to the unpredictably massive atmosphere), it is *not* giving off more heat than it gets from the sun, *nor* is it cooling off (as Velikovsky also predicted). On both counts, Velikovsky's predictions were in error. He also vigorously denounced the "runaway greenhouse theory" for the high surface temperature, asserting repeatedly that such a mechanism was impossible—if it was possible (as the latest space probes indicate), then his major prediction would have been blown away.

Turning to our moon, Velikovsky's followers make much of his prediction of "frequent moonquakes" and "remanent magnetism," but a closer look is less impressive. Moonquakes are *not* "numerous" as Velikovsky predicted—they are weak and rare. He said it was possible that astronauts on the moon for a few hours might "experience" (i.e., feel) a moonquake, but in fact they could remain there for hundreds of millions of years without that ever happening. The traces of magnetism in the lunar lava, which *did* surprise geologists, was in Velikovsky's view the result of the rocks melting and recooling only thousands of years ago. Yet *all* radioactive dating schemes indicate that the moon has not melted for billions of years. The recent melting predicted by Velikovsky supposedly happened in the presence of a magnetic field of a passing planet. (He suggested Mars or Venus, but neither has a magnetic field of anywhere near the needed power; so Velikovsky assumed that they used to have such a field but subsequently lost it.) However, the actual magnetic orientations of surface samples are randomly directed, indicating that they were formed in connection with individual cratering events. They do not show a planetwide consistent orientation as they presumably would in the case of an externally imposed field. Velikovsky predicted that lethal amounts of radioactivity would endanger the lives of the lunar astronauts, but none such was found. He predicted that the surface had been covered with water only thousands of years ago, but not a trace was found. He claimed that the craters had been created by bubbling of the surface and by interplanetary lightning bolts, not by meteors and volcanoes, but no evidence was found. He declared that "within the memory of man" the moon had been captured

into orbit around the earth. These and other claims were so much at variance with every possible interpretation of the Apollo moon data that it was no wonder professional space scientists reacted angrily at the mere mention of Velikovsky's name.

Other cases of Velikovsky's false predictions can be found: the bountiful argon of Mars (Velikovsky was wrong, and his followers have been tripping over each other conjuring up mutually contradictory excuses), the canals of Mars (Velikovsky claimed they were fracture cracks, but they were really optical illusions—there are cracks on Mars but not of the kind Velikovsky predicted), the skies of Mars (Velikovsky predicted they would be black, but they are reddish), the temperature of Jupiter (Velikovsky said it would be cold, but he *did* guess that the atmosphere would emit radio waves—a near miss since it does, but the ionosphere emits even more radio waves), the Jovian Red Spot (Velikovsky said it was a scar on the surface of Jupiter, showing where Venus had emerged; but there is no surface of Jupiter, and the "red spot" is just a larger-than-average random hurricane), a Mars "richly populated by microorganisms pathogenic to man" (they avoided Viking samples), and a moon rich in oxygen, chlorine, and sulfur (these are in fact among the most depleted elements on the moon). Velikovsky was wrong on all of these predictions; yet by altering the meaning or by ignoring it entirely, his supporters claimed that he was right.

Philosophers of science have also objected to the often expressed notion that Velikovsky was rejected solely because he disagreed with the dogmas of the age. According to the pro-Velikovsky historian Joseph May, "Apparently [*Worlds in Collision*] challenged too many of those principles commonly believed to be necessary, though lacking in direct proof . . . It provoked the kind of reaction to be expected when the perceived needs of a community take precedence over the purposes of the community. One gathers that an important reason for the resistance to new hypotheses, like Velikovsky's, that require major revisions of theoretical structures lies in the vested interests and ego involvement of those who have devoted years of study under the guidance of the accepted assumptions or who have committed themselves in print . . . How ironic that so many humane people, proud of their liberalism in political or social matters, should vehemently defend the belief that science cannot function unless it intolerantly rejects departures from past belief."

Leroy Ellenberger, another pro-Velikovsky theorist and a professional industrial engineer, wrote in 1979: "Thus it is clear that under the influence of strong ego forces scientists who felt threatened by Velikovsky's thesis reacted with the violence they did. The impact of the original reaction persists to this day as many original participants are still

alive and younger scientists appear to follow blindly the judgments made so hastily in 1950 and before."

That is certainly not a flattering view of how science functions today. Frankly, it is downright insulting, as historian Michael Jones wrote last year: "This kind of statement is exactly that which can be calculated to antagonize scholars most effectively, and provide a justifiable reason for thinking that Velikovsky's writing and followers are trivial and uninformed. The appearance of new evidence constantly causes scholars to modify their views," as indeed they have since 1950 in practically every field. Nor should it be ignored that there is considerable ego capital in embracing the pro-Velikovsky movement as well, since it is in effect a "shortcut" around all the details of contemporary science (which has been made obsolete by the new dogma) and a posturing of superiority over all believers in the "old" theories (and who would not, for example, like to be compared with Galileo and Newton and Pasteur?).

So what of the future? With the death of the originator of these latest reconstructions of Earth's entire underpinning, the movement may fade or may descend into internecine ideological struggles, since "holy writ" is interpreted differently by different students and there is no authority to appeal to. Or, perhaps, with the departure of the chief protagonist in what often became a personality conflict (with evidence often glossed over by both sides), any valuable contributions that might be gleaned from the Velikovskian reconstruction can be melded into the mainstream of ongoing (and ever changing) science. ●

Part II

Passions and Purposes: A Perspective

Henry H. Bauer

For more than three decades the Velikovsky controversy has been unproductive. In all that time, no common ground has been established on which the two sides could carry the discussion further; indeed, the nature and flavor of the arguments remain essentially unaltered.

Immanuel Velikovsky, one can safely assume, wished to have his views accepted by historians and by scientists. He did not succeed: scientists have not performed experiments that he suggested and have not taken his ideas seriously enough to discuss them in scholarly journals.

Velikovsky's critics reveal a variety of motives. To combat pseudoscience is perhaps the chief one, but one gathers that they would also like reviewers to be knowledgeable about science, editors and publishers to promulgate only scientifically sound material, and the public to be critical rather than gullible.

Velikovsky's supporters want his ideas to be taken seriously by the specialists. Beyond that, they want scientists always to behave impeccably, in accord with the highest ideals regarding scientific activity, and to reform their ways when they do not so behave; they also want "catastrophism" to be accepted as a scientifically plausible world-view.

Neither critics nor supporters have been markedly successful. Pseudoscience flourishes; reviewers are much as they were 30 years ago; and much unsound so-called science is published, and the public laps it up. Velikovsky's ideas are taken seriously by only a tiny number of specialists; scientists behave much as they did 30 years ago; "catastrophism" is generally regarded as a cult, not as a hypothesis in the mainstream of scientific thought. It is not easy to find anyone involved in the Velikovsky

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Henry H. Bauer, a chemist with an interest in the sociology of science, is Dean of the College of Arts and Sciences at Virginia Polytechnic Institute and State University and author of a forthcoming work analyzing the Velikovsky controversy. This piece is an extract from a longer article.

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debate whose objectives were reached.

Much frustration and anger, and much self-defeating behavior, result when actions are aimed at accomplishing the impossible; or when the goals of one's activities have not been clearly formulated; or, even if the goals are clear, if the means used in attempting to achieve them are unrealistic—not capable of leading to those goals. One sees all these factors at work in the Velikovsky affair.

Velikovsky sought to be accepted as a scientist, but he broke the accepted rules by which scientists work. Velikovsky's critics wanted everyone to share their own attitude toward science and scholarship—hardly a realistic goal. Velikovsky's supporters could not bring themselves to accept the realities of what science is and how scientists work.

Further, almost everyone in the affair failed to make a crucial distinction in seeking their objectives. They failed to distinguish between those intellectual activities by which knowledge eventually becomes an accepted part of the human heritage and those political or social activities that are appropriate in attempts to reach a purely contemporary acceptance of some particular point of view. As a result, the discussions were a confused mixture of attempts at logic and weighing the evidence at one extreme, and of propaganda and attempts to exert authority at the other.

Debates are hardly likely to be productive when so many points of confusion exist. Furthermore, in situations where opinion becomes polarized and emotions are aroused, those who seek even-handedly to clarify the issues are welcomed by none of those who are arguing. It would be quite futile, of course, to suggest that participants in such controversies should act in some other manner—if they could, they would. But it might be useful to recognize how an individual who partakes in controversy might best serve his own purpose.

First, one needs to define clearly what one seeks to accomplish. Second, one needs to judge whether the goal is attainable. Third, if it is, one needs to find the best means toward reaching that goal. I am hard put to find anyone in the Velikovsky affair who behaved as though he had followed those simple steps. The seeking of unrealistic goals was characteristic of all concerned, and the means chosen were not well suited to attaining those objectives even if they had been attainable.

Both sides wrote and spoke as though they wanted to persuade the other. How might one best attempt such a task? One way might be to look for evidence or viewpoints that would appeal to the other side. Another might be to use modes of expression least likely to offend those persons who are to be persuaded. Was there anyone in the affair who behaved in that fashion?

From the beginning, Velikovsky let the scientific community know, in

no uncertain terms, that he stood in dead opposition, that he considered some major accepted "truths" to be wrong, and that the community was hidebound and psychologically incapable of recognizing the real truths. His supporters followed that lead.

The critics did not take the time and trouble to explain in detail what their objections were; they asserted them and said that it would be an unwarranted effort to go into the details. So the goal was perhaps clear, but the method adopted was one that could not lead to that goal.

So the controversy was rarely waged on an intellectual plane—it was chiefly a battle of propaganda. And in that the critics were much less adept than were Velikovsky and his supporters. For scientists engaged in these types of ventures, it would be very useful to be clear about what they are seeking: an intellectual resolution of the substantive issues, or acceptance by a wide public that the experts are right in their judgment. These are two quite distinct things; but scholars, used to arguing among themselves—where intellectual resolution and acceptance by the peer community tend to go hand in hand—do not often recognize what they need to do if they wish to achieve acceptance of their views outside their own sphere of professional activity.

The Velikovsky affair, then, has been passionate and unproductive—it has been both for the same reasons: interpretations were mistaken for facts, personal wishes were translated into absolute "shoulds." Other controversies frequently evidence the same processes; but it is not inevitable that this be so. Each of us can become more dispassionate and more likely to attain an objective, by pausing before acting or speaking out of emotion and by asking:

Is this occurrence *really* as I picture it? (Can I prove this to be pseudoscience? Am I absolutely sure that this is a conspiracy by the scientific establishment? Is this objectively an insult?)

Which of my beliefs are involved here? Are those beliefs rational? (Can pseudoscience be eliminated? Will scientists ever behave other than in the way they behave?) Am I translating a personal wish into a "should"? (If so, don't.)

What do I wish to accomplish? What are the best available means?

Those who have never systematically practiced such a procedure will be surprised at the extent to which calm replaces anger as one works through these questions. Emotions are to that extent under one's own control: each of us chooses among pleasure, calm, anger, and all the rest—by choice of *interpretation* of an event and by choice of *belief*. Anger can be lessened—even avoided altogether—to the degree that one's beliefs and interpretations are in tune with external reality. If one understands what types of things actually happen, and accepts—since one has no control

over it—that they are bound to happen, then one will not say to oneself that they "should" not happen. One may not *like* the occurrences, and one is certainly free to do whatever is possible to make things more to one's liking—but one will not be consumed by helpless rage and will thereby be freer to work effectively for the desired result.

The Velikovsky affair has been overwhelmingly a battle of polemic and propaganda. The commonly held view that substantive points of science or fact were at stake is only partly correct. In any event, the manner in which the arguments were carried on made resolution of substantive points impossible. Passions were generated and released, but never purposefully harnessed. ●

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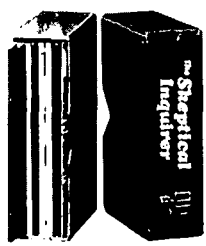

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Part III

The Distortions Continue

Kendrick Frazier

Immanuel Velikovsky may have died last November, but the promotion of his eccentric brand of planetary-origin theory continues undiminished. An advertisement in the April 20, 1980, *New York Times Book Review* symbolizes the start of the posthumous stage of Velikovskianism and serves as an interesting mini case-study of the subject.

The ad, placed by Doubleday, the publisher of all of Velikovsky's books in hardcover, is titled, "Velikovsky: The Controversy Continues." The ad reminds us that all of Velikovsky's books are still in print. It also announces that he left behind manuscripts for several new books "which will doubtless . . . interest intelligent and open-minded readers in search of an understanding of the forces that have shaped our world."

But it also briefly reviews the Velikovsky controversy, labeling it "one of the most heated controversies in the history of science," and goes on to make some specific assertions about recent discoveries of planetary science and Velikovsky's role in supposedly anticipating them.

What particularly caught my eye was the statement that findings of the recent Pioneer probe of Venus's atmosphere supported Velikovsky's theories about that planet's origins. Those theories, you will recall, postulate that Venus was born about 3,500 years ago as a comet ejected out of Jupiter and that this comet grazed Earth around 1500 B.C., causing, among other things, the earth to temporarily stop rotating and accounting for various biblical legends. Then, in the seventh and eighth centuries B.C., the comet knocked Mars into several near-collisions with Earth and the atmospheres of all three intertwined. The comet then settled into a circular orbit and became the planet we now call Venus.

Kendrick Frazier, editor of the SKEPTICAL INQUIRER *and former editor of* Science News, *has written extensively on the geophysical sciences. His recent book,* The Violent Face of Nature, *deals with geophysical disasters on Earth.*

"Velikovsky's assertion that Venus is a young planet, expelled from Jupiter only thousands of years ago," the Doubleday ad states, "has received strong support from the evidence of the Pioneer probe which revealed so little surface erosion and such an abundance of primordial Argon 36 that scientists now speculate that Venus was formed more recently than the other planets and by a different process."

The ad also states that Velikovsky claimed that space is not a void "but is filled with electromagnetic fields and radiations. This claim completely contradicted the accepted view. But the first satellites encountered magnetic fields, solar winds, and radiations, and 'heresy' became fact." It also mentions Velikovsky's claims that Venus should be hot (due to its recent violent birth) and that "Venus should be surrounded by a blanket of petroleum hydrocarbons." Even this last prediction, the ad claims, has now been verified. "Methane (hydrocarbons) has been found on Venus."

I have always been fascinated by planetary astronomy, and as a professional science writer and editor I have closely followed the past decade's striking discoveries about the planets. This is a remarkable age of discovery. In just the past four years our spacecraft have landed on Mars, sent probes down through the atmosphere of Venus, photographed Jupiter and its moons at close range, and flown inside the rings of Saturn. We have discovered rings around Uranus and Jupiter, a fourteenth and fifteenth satellite of Jupiter, another set of rings and several moons around Saturn, and volcanoes in eruption on the Jovian moon Io. We've detected lightning on Venus, directly measured the composition of its dense atmosphere, and found a surprisingly ordered wind system around the planet. Soviet spacecraft have landed on Venus and photographed its surface. We've found the solar system to be extraordinarily interesting.

But I could not seem to recall any report that we've discovered Venus to be a very young planet, born in historic times and scooting about in the neighborhood of Earth as recently as 2,700 years ago. Certainly I couldn't remember any such announcement coming out of the Pioneer Venus mission to that planet in late 1978. But perhaps I missed something.

I decided to send copies of this ad to a number of noted planetary scientists and ask them about its assertions. Most of the scientists queried had participated in the remarkable observations and studies of the planets—especially Jupiter and Venus—in the past few years. They, more than anyone, would know whether, as the ad claims, the recent findings have verified Velikovsky's theories. With only a few exceptions they had not previously spoken out on Velikovsky's theories. I received responses from about half those queried and followed up by phone calls to about half of the nonrespondents.

There was overwhelming agreement from the planetary scientists that

the substantive claims in the ad were wrong. Some put it far stronger than that. "The ad is thoroughly dishonest," said A. G. W. Cameron of the Harvard-Smithsonian Center for Astrophysics. "The ad, like the Velikovsky books it is promoting, contains more falsehoods in a paragraph than one can refute in a chapter," said Edward Anders, a University of Chicago cosmochemist who has specialized in chemical studies investigating the early history of the solar system. "No reputable scientist 'now speculate[s] that . . . Venus was formed more recently than the other planets,' " said Anders.

Velikovsky. The Controversy Continues.

In 1950 the publication of *Worlds in Collision* created one of the most heated controversies in the history of science. Challenging many of the accepted views about the order of the universe, Immanuel Velikovsky's book became a #1 bestseller. It was attacked by experts as well as vested interests as heresy. It was respectfully or enthusiastically received by other renowned scholars and general readers. Now, thirty years later, the controversy continues and Velikovsky's work is the subject of books, magazines and articles as well as symposia held throughout the world.

Operating on the basis of his central idea—that our solar system has undergone catastrophic changes in historical times—Dr. Velikovsky presented unorthodox claims about the nature of the planets and interplanetary space. For example, he claimed that space is not a void, but is filled with electromagnetic fields and radiations. This claim completely contradicted the accepted view. But the first satellites encountered magnetic fields, solar winds, and radiation, and "heresy" became fact. Similarly, Velikovsky's assertion that Venus is a young planet, expelled from Jupiter only thousands of years ago, has received strong support from the evidence of the Pioneer probe which revealed so little surface erosion and such an abundance of primordial Argon 36 that scientists now speculate that it appears Venus was formed more recently than the other planets and by a different process. These findings upset their uniformitarian view of the solar system.

In the decades since the publication of *Worlds in Collision*, dozens of Velikovsky's claims have been verified. Indeed, William Plummer wrote in *Science*, "Some of the least expected discoveries made by planetary astronomers in recent years were correctly predicted by Velikovsky. He argued that Jupiter should be a strong source of radio waves, that the earth should have a magnetosphere, that the surface of Venus should be hot, that Venus might exhibit an anomalous rotation, and that Venus should be surrounded by a blanket of petroleum hydrocarbons. All except the last of these predictions have been verified, most of them by accident." In fact, in the time since this was written in 1969, the last of these predictions has been verified. Methane (hydrocarbons) has been found on Venus.

In the preface to his yet-to-be-published *The Test of Time*, Velikovsky looks back on his career and writes, "I was compelled by logic and by evidence to penetrate into so many premises of the house of science. *I freely admit to having* repeatedly caused fires, though the candle in my hand was carried only for illumination." Immanuel Velikovsky died last November, hard at work on that process of illumination. Though he is gone now, he left behind the manuscripts of several new books which will doubtless fuel the debate about his work, stimulate original thinking, and interest intelligent and open-minded readers in *search of an understanding of the forces that have shaped* our world.

The Velikovsky books (all are in print) are available through your local bookseller or postpaid direct from Doubleday & Company, Inc., Garden City, New York, 11530. They are *Worlds in Collision* ($10.95), *Ages in Chaos* ($10.00), *Earth in Upheaval* ($8.95), *Oedipus and Akhnaton* ($8.95), *Peoples of the Sea* ($10.00), and *Ramses II and His Time* ($10.00). Also available is *Velikovsky Reconsidered* ($8.95) by the editors of *Pensée*, a look at the Velikovsky controversy.

DOUBLEDAY

The publisher's ad and its key claims

"Several of the statements in the ad are outright lies," said University of Hawaii astronomer David Morrison, particularly the assertion that scientists now speculate that Venus is a young planet. "While the large amount of argon-36 discovered by Pioneer has indeed upset current ideas about the conditions (particularly pressure) in the solar nebula when the planets formed, a recent birth of Venus is not in any way indicated."

"Anyway," said UCLA astronomer George O. Abell, "Velikovsky never mentioned argon-36." Abell and Morrison, a former deputy director of lunar and planetary programs for NASA, are two respondents who have in the past tried to clarify issues in the Velikovsky debate.

According to chemist Vance I. Oyama of NASA's Ames Research Center, the argon-36 abundances for Mars, Earth, and Venus are con-

sistent with the model that volatiles are incorporated into the grains that formed these planets, provided the large pressure differences, but small temperature differences, characterized the region of the nebula that gave birth to the solar system some 4.5 billion years ago. "The argon-36 amounts in the atmosphere then are suggestive that Venus's position in the solar system is approximately correct," Oyama said.

Michael B. McElroy, a Harvard University atmospheric chemist and a specialist in studies of planetary atmospheres, put the argon/age question into perspective. The noble gases on Venus are indeed abundant and puzzling, he said, and in his opinion Venus may be *slightly* younger than Earth. "But, by slightly, I still mean 4.5 billion years old," he said. McElroy thinks the likely age difference is only about 1 million years. As for the ad's assertion that scientific support has been found for Venus being a young planet, "Obviously, I don't agree," he said.

Even if there had been any serious questions about Venus's age, they would have been settled this past spring. On May 28, scientists announced that the Pioneer Venus satellite's radar indicated the presence of an apparently ancient supercontinent on the planet, with a crust that could be 4 billion years old.

McElroy, who said he had read Velikovsky's *Worlds in Collision*, noted the difficulty scientists have in responding to claims that the author's predictions have been verified. Velikovsky did say Venus should be hot, for example, and it is; but he predicted that it would be hot because he thought it had been born as a comet out of Jupiter 3,500 years ago. "That," says McElroy, "is not true." A pronounced "greenhouse effect" is the leading explanation for Venus's high temperatures. That view has been strongly supported by the Pioneer Venus data.

What about the ad's claim that Velikovsky's prediction of "a blanket of petroleum hydrocarbons" surrounding Venus has been verified by a recent discovery of methane on Venus? That assertion is false, both in fact and in implication.

Oyama was the principal investigator for the gas chromatograph experiment on our Pioneer probes of Venus. "The Pioneer Venus gas chromatograph was capable of measuring methane, ethane, and propane, but none of these molecules could be detected," he said. "If they exist in the Venus lower atmosphere, their level is less than a part per million. It may be concluded that the surface of the planet is hardly likely to be 'blanketed' with a layer of petroleum."

"Hydrocarbons have been found on Venus in only trace amounts," said Kaula. Ethane (C_2H_6) of less than one part in a million is the only one reported from the mass spectrometer, he said, while the gas chromatograph found none and set upper limits of less than 5 parts per million of

methane, ethylene, ethane, and propane. "Such drastically low levels are evidence against Venus's having come from Jupiter, since it would be difficult to imagine a process of stripping these gases, abundant on Jupiter, off a planet so completely if it emerged therefrom."

The petroleum hydrocarbon assertion "is an example of the meaninglessness of Velikovsky's 'predictions,' because of their lack of quantitativeness," Kaula said. It should be remembered that Velikovsky's references to Venus's petroleum were quite literal. He wasn't referring to trace gases. He believed that from the comet Venus "oil rained on the desert of Arabia and on the land of Egypt" and that this "rain of fire-water contributed to the earth's supply of petroleum." Was Venus a regular cosmic gusher? Alas, the facts don't support this grand conception.

The respondents similarly labeled as absurd the ad's claim that Velikovsky first predicted the fact that interplanetary space is filled with electromagnetic fields and radiations. "Before Velikovsky, every astronomer knew that space was filled with electromagnetic radiations and fields," said one. "How else could light get to Earth from distant galaxies."

"Everything we see in the sky we see by means of electromagnetic waves from those objects," pointed out Abell. "Velikovsky, of course, didn't know what 'electromagnetic radiation' means."

"That interplanetary space is not a void, and in particular that the earth has a magnetosphere, was predicted, and serious calculations were carried out by scientists long before Velikovsky," noted Kaula. He referred to Stormer's pre-1910 calculations on charged particles in the magnetic field to explain the aurora, Chapman and Ferraro's solar-wind models in the 1920s and 1930s to explain magnetic storms, and work before 1950 by Bierman, Alfven, Forbush, and others on solar-emitted ions and their interactions with comets, the earth's magnetic field, and so forth.

Several respondents also disputed the ad's implication that the Velikovsky controversy was among scientists. "The Velikovsky hypothesis was *never* controversial among scientists," said Abell. "It is, and was recognized at once as, a crank idea." Said another, "There is no controversy about Velikovsky in the science community. It is only between scientists and admirers of Velikovsky who are not experts in astronomy, physics, chemistry, or geology." Those comments were borne out by the other respondents, none of whom considered Velikovsky's views serious scientific hypotheses.

A number of respondents addressed broader scientific and philosophical isues in the Velikovsky debate.

"Science requires quantitative statements presented with likely errors," said Edward L. Fireman of the Harvard-Smithsonian Center for Astrophysics. "Science does not accept predictions (whether right or wrong)

unless accompanied by a statement of the required assumptions and the proper deductive formalities. Any soothsayer can make vague predictions about Venus or any other subject and later boast that most of the predictions turned out to be right when the measurements are done. Scientists, in contrast, usually discuss the discrepancies (and errors) between the predictions and the measured results and try to find possibilities for improvements." That point was reiterated by Abell. "Velikovsky's predictions were vague and general, and the so-called predictions said to come true were all formulated post hoc."

Several of the planetary scientists contacted felt that scientific response to the claims of Velikovsky promoters only served to give the mistaken impression that scientists took his views seriously. "I personally don't think [the ad] deserves comment," said one of the principal investigators in our Voyager mission to Jupiter. "I'd be happy to comment on things for which there is some more supportive information."

A NASA research scientist prominently involved in the Pioneer Venus mission said, "Quite frankly, I really don't want to get involved in anything to do with the subject of Velikovsky. I think a mistake was made by some people in the early years in taking him too seriously. It only led to more sales and publicity." As for the Doubleday ad, this scientist said simply, "I don't know where they got some of their claims. There were a number of misstatements." He was one of several who felt the overwrought scientific reaction of the early 1950s was a mistake. McElroy, while not agreeing with Velikovsky's views, also regretted that Velikovsky had been "treated harshly" in the fifties.

One of the most thoughtful replies came from Johns Hopkins University geophysicist Walter M. Elsasser, originator of the dynamo theory of the origin of the earth's magnetic field. "I not only have read some of Mr. Velikovsky's writings but even knew him personally at one period of my life," said Elsasser. "My only drawback is that I am a reasonably successful academic scientist, which in the eyes of some segments of the public makes me a representative of 'vested interests.' I do not, however, consider myself as biased in the matter.

"I have often observed Velikovsky's method of making 'scientific' predictions. He makes a whole string of predictions. Then he waits until some experiments show up, and from the results he picks those that happen to verify some things that he predicted previously, forgetting simply all the other predictions of his that were not verified. This, in my opinion, and in that of anybody familiar with scientific method, is not a scientific procedure at all; it is a form of fraud.

"I do not think that Velikovsky as a person had any intent to defraud . . . He was undoubtedly a man of phenomenal intelligence; and it is a

tragedy to see such talent being used in an utterly asocial manner as he did by trying to give his personal fantasies a 'scientific' validation."

To return once again to the ad and its assertions: every scientist contacted for this article felt the ad was at best misleading, at worst dishonest.

"I am used to distortions by the Velikovsky supporters, but this ad seems to be particularly reprehensible," said David Morrison. "I would think Doubleday could make a perfectly good case for selling Velikovsky's books, which have long enjoyed a wide and enthusiastic readership, without sinking to the level of this ad."

"If Doubleday were trying to sell appliances rather than books with such doubletalk," said Edward Anders, "it would be in trouble with the FTC, the Better Business Bureau, and perhaps even the U.S. Chamber of Commerce."

No one disputes the right of a publisher to promote its books in any way it sees fit. We've long learned to accept exaggerations and distortions in advertising of all kinds. And Doubleday, a respected publisher, could probably even make a case that the phenomenal economic success of Velikovsky's books over the decades has helped enable it to market less lucrative but legitimate works of science. There is no reason to believe that as a publisher it is motivated by a desire to promulgate pseudosciences; it has published many excellent science books, including works by Isaac Asimov and astronomer E. C. Krupp that have included strong critiques of Velikovskianism.

But having said all that, scientists and others also have the right to criticize and evaluate the scientific claims a publisher makes on behalf of a work of fringe science it is promoting. Assertions like those made in the Velikovsky ad have long helped reinforce the idea among the well-meaning public, including some portions of the nonscience academic community, that Velikovsky did not get a fair hearing. I have attempted in this article to determine whether several very specific assertions have any validity. They do not.

There is near-zero hope, nevertheless, that the promoters and consumers of Velikovskian confusion will suddenly change their ways. The psychological appeal of Velikovskianism to certain segments of society is too powerful. It's best to keep one's humor and sense of proportion. As William Kaula said: "My normal second thought after being irritated by nonsense in the name of science is like the submariner's response to the urge to exercise: lie down until the feeling goes away, since the likelihood of satisfying resolution is low." But sometimes it is enjoyable, and maybe even marginally useful, to try. ●

Academia and the Occult: An Experience at Arizona

J. Richard Greenwell

In the spring of 1979, the student newspaper at the University of Arizona carried a story about a new course to be offered in the fall by the Department of Anthropology. The course, Anthropology 298W, was entitled "Witchcraft and the Occult," and was to be given by Paul R. Turner, a full professor in the department. Although Turner is a linguist, he was interested in how witchcraft formed an integral part of the culture of many societies. He had had first-hand experience of the cultural role of witchcraft while living among the Central Highland Indians of Oaxaca, Mexico. He also had an interest in the witchcraft of medieval Europe, colonial America, and modern times, and in all the "psychic" phenomena associated with the occult. All of these topics formed the basis for the new course, which had been approved by the department faculty. (The University of Arizona is one of the major educational and research institutions of the Southwest, with about 30,000 students. Its Department of Anthropology is rated among the top ten in the nation.)

The university administration was later to express some concern over the course; apparently, some irate taxpayers had approached the Arizona Board of Regents concerning the possible use of public funds for "witchcraft training." Turner assured the adminstration that the course would not instruct students on "how to" in these areas. As it later turned out, numerous guest speakers provided "psychic" demonstrations, instructed on how to attain certain powers, or abilities, and generally tried to convince the students of the reality of the topics they were discusssing. Most of the students, however, needed little convincing.

Having an interest in these matters from the perspectives of both

J. Richard Greenwell is with the Office of Arid Lands Studies at the University of Arizona.

anthropology and psychology, I enrolled in the course. In this article I shall report my impressions of how the course evolved and provide data gathered from an informal survey I conducted among the students. In both areas, there were some surprises.

The first ten weeks of the course concentrated on the occult, including such subjects as astrology, water witching, psychokinesis, astral-projection, and ghosts. The final seven weeks concentrated on witchcraft, with special emphasis on demonic possession and exorcism, witchcraft in the Middle Ages, and witchcraft and logic. Unfortunately, most of the lectures were delivered by guest speakers, particularly during the first (occult) part of the course, and nearly all of them gave highly prejudiced versions of their topics. (Two notable exceptions were lectures by university faculty: Anoop Chandola, of the Department of Oriental Studies, who presented his research findings on "fire licking," and Charles Polzer, a Jesuit priest and an ethnohistorian at the university's Arizona State Museum, who discussed the Catholic church's past and present positions on the occult.)

Professor Turner, of course, could not fully control the format or the content of the guest lectures, and this sometimes placed him in a delicate situation. He has since indicated to me that there will be fewer guest lectures when the course is given again this fall. I must also note, in fairness, that Turner attempted to provide some balance by selecting as a required text Milbourne Christopher's skeptical book *ESP, Seers, and Psychics* (the second required text was Lucy Mair's *Witchcraft*, a fairly academic review). However, in my opinion, the information provided in Evans's book did not have as great an impact on the students as did the demonstrations and their personal experiences in class.

Of increasing interest to me as the course progressed was not so much the topics being addressed as the students' attitudes toward them. It soon became fairly clear that I was almost alone in advocating objective assessments of paranormal claims. My questions to the speakers tended to be related to environmental conditions and methodology (or the lack of it); the questions from the other students more often related to the personal insights gained by the speakers as a result of their experiences. The students made it clear to me in class discussions that they felt that science can only explain the hows and whys, and that only answers relating to the meaning of life and the fulfillment of the personal self have any value to the individual.

Demonstrations Accepted as Authentic

Particularly frustrating to me were the various demonstrations conducted by guest speakers, which were generally accepted as authentic by most of

the students. I pointed out that, if a performer were introduced as a stage magician, his feats, no matter how baffling, would be accepted as tricks by all; but, if the performer were introduced as a renowned psychic, his feats would immediately be accepted by many as paranormal. *The manner in which a performer is introduced will dictate whether his feats are "normal" or "paranormal."* As one student sagely asked me: If a performer is really psychic, on what grounds could one question his abilities?

The most bothersome guest lecture was given by the Rev. Robert Ireland, of the Unity of Life Church in Phoenix (and brother of the more well known Rev. Richard Ireland). Ireland has a commanding voice and personality, is good-looking, and is a fashionable dresser. It is not too difficult to see how he could sell timber to Canada. His "experiment" consisted of having all the students write a personal question on a slip of paper, which he would then read and respond to while blindfolded. With much fanfare, and with the assistance of two students, he blindfolded himself. The actual taping of his eyes he did himself, and in the process, allowed himself to see directly below. Ireland, of course, was able to read every question, albeit with some difficulty, by peering directly downward; and Turner later mentioned that Ireland had requested the overhead beams be turned on for the presentation. He invariably placed the slips of paper on top of his head after opening them, presumably to increase his psychic ability; but I noticed that he sometimes turned the paper around in the process, which would make it easier to read if he had opened it upside down.

All the questions directed to him were personal and "futuristic," and easy to answer (e.g., "Yes, your aunt will get over her forthcoming operation after a period of recovery"). My question was a little different: "On what day was I born?"

"Well, we have somebody here who doesn't know his birthday. Isn't that right?" he asked cautiously.

"No," I answered. "I know my birthday, but I want to know if *you* know it."

"That's an irrelevant question," answered Ireland, scrunching up my slip of paper and moving on to the next question.

I announced for all to hear: "I'm sorry you don't seem to be able to answer my simple question."

A Challenge to the Class

While some of the students seemed to have doubts about Ireland's abilities, it was obvious that the majority of them were convinced that he had demonstrated psychic powers. Coincidentally, that same evening my wife

and I attended a private function at which Harry Blackstone, Jr., a leading American magician, performed. Some of his feats were quite stunning to the uninitiated, and I thought how much more impressive they were than Ireland's simple "psychic" demonstrations. I therefore challenged the class and obtained Professor Turner's approval to carry out a little "psychic" demonstration of my own (to be followed by a guest lecture that Turner invited me to give).

The experiment was simple enough and is probably known to many readers. Each student wrote a word on a slip of paper, folded it, inserted it into an envelope, and sealed the envelope. I collected the envelopes and, after some "psychic" preparations, proceeded to read the contents of each envelope prior to opening it.

To successfully perform the trick, I enlisted the aid of one of the students, who wrote the word "July" on his paper. When gathering the envelopes I made sure his was on the bottom of the pile. I thus was able to announce the word "July" and then open the first envelope. This enabled me to use the actual word in the first envelope to "see" the word in the second envelope, and so on. As I had anticipated, the students directed their attention toward the person claiming to be the author of each word and not toward me and the envelopes I was opening. This enabled me to successfully "predict" the contents of several envelopes.

I had announced before the demonstration that I required total silence until after the readings "in order not to disrupt the vibratory level existing in the room." The real reason, of course, was to discourage nettlesome questions from troublesome students. But one student, whose word I had just "predicted" and who was sitting close to the podium, began questioning whether it was actually his envelope. As the questions persisted, I became annoyed and discontinued the experiment.

I had intended to debrief the students after the demonstration, but I was not even given the opportunity to complete my performance. Guest "psychics" were usually treated with appropriate deference, but many students, suspecting where my sympathies lay, were anxious to "catch" me. After all, they "knew" that I did not possess psychic powers (just as they would "know" that a stage magician did not). I was amazed to hear the following week, from the very student who had mercilessly exposed my trick, that some students "toward the back" of the class could still not understand how I had successfully "read" the contents of the first few envelopes, and they were convinced that, in spite of everything, I *did* have psychic powers!

Throughout the course, and particularly during my own guest lecture, I pointed out the important distinction between objective and subjective forms of evidence and that the demonstrations we had seen in class had

invariably been subjective. Students had "felt" things, or "knew" things, but nobody had performed a feat that everyone had objectively evaluated as paranormal. The students accepted this distinction as valid and agreed that they had undergone subjective experiences. (Unfortunately, the scheduled lecture and possible demonstration of levitation had to be replaced by another topic.) They also repeated that they considered subjective experiences very important because they can provide meanings and answers that objectivity, because of its "sterile" nature, cannot. This is an argument that the logician probably cannot combat with any hope of success.

Questionnaire on Anomalous Phenomena

Intrigued by the students' attitudes toward the paranormal, I decided to acquire some direct data about them by administering the Questionnaire on Anomalous Phenomena, which I designed in collaboration with James E. King, an associate in the Psychology Department. It queried the students about their attitudes toward 18 types of phenomena. Most of the phenomena had been the subject of class lectures and/or discussions, but we added several new topics, including two nonparanormal categories — hypnosis and sleepwalking — for comparison. The questionnaire also asked the students to give their political and religious convictions on a scale of 1 to 5 (liberal to conservative, and nonreligious to very religious, respectively), their age, and their sex.

After some dropouts, 56 students remained enrolled in the course, about double the number Turner had originally expected. Twenty-eight questionnaires were returned. (Many students, although registered, had stopped coming to class during the final weeks of the semester, when the questionnaire was administered, and I am reasonably certain that most students who were requested to complete a questionnaire did so.) The ranking of the 18 phenomena by the percentage of positive responses appears in Table 1.

Some of the results were surprising. "Astrology," which we anticipated would have a strong showing, was accepted by a mere 46 percent of the students, and was lower than "Ghosts," 64 percent, and "Reincarnation," 71 percent. "Psychic Healing/Surgery" was also relatively low, 54 percent, as was "Biorhythms," 36 percent. "Telepathy" was the overall winner with 86 percent, followed closely by "Astral-Projection" with 82 percent. In fact, more students believed in telepathy than in hypnosis (which had been adequately demonstrated in class) or sleepwalking, neither of which is paranormal.

In Table 1, we compared our results on 10 topics with the results of a

TABLE 1
Ranking of Phenomena Accepted as Real by Students

	(N=28) %	
Telepathy[1]	86	(Gallup 1978 = 51%)
Astral Projection	82	
Hypnosis	82	
Sleepwalking	82	
Precognition	79	(Gallup 1978 = 37%)
Clairvoyance	71	(Gallup 1978 = 24%)
Reincarnation	71	
Flying Saucers[2]	68	(Gallup 1978 = 57%)
Ghosts	64	(Gallup 1978 = 11%)
Psychokinesis	57	
Psychic Healing/Surgery	54	
Astrology	46	(Gallup 1978 = 29%)
Poltergeists	39	
Biorhythms	36	
Bigfoot	32	(Gallup 1978 = 13%)
Loch Ness Monster	32	(Gallup 1978 = 13%)
Angels	32	(Gallup 1978 = 54%)
Demons/Devils[3]	21	(Gallup 1978 = 39%)

[1]Referred to as "ESP" in Gallup Poll.
[2]Referred to as "UFOs" in Gallup Poll.
[3]Referred to as only "Devils" in Gallup Poll.

TABLE 2
Percentage Differences on 10 Phenomena
Between Students and Gallup Respondents

Phenomena	Students %	Gallup %	Difference %	Significance[4]
Ghosts	64	11	53	.0002
Clairvoyance	71	24	47	.0002
Precognition	79	37	42	.0002
Telepathy[1]	86	51	35	.0004
Bigfoot	32	13	19	.003
Loch Ness Monster	32	13	19	.004
Astrology	46	29	17	.03
Flying Saucers[2]	68	57	11	N.S.
Demons/Devils[3]	21	39	-18	N.S.
Angels	32	54	-22	.02

[1]Referred to as "ESP" in Gallup Poll.
[2]Referred to as "UFOs" in Gallup Poll.
[3]Referred to as only "Devils" in Gallup Poll.
[4]Significance determined by 2-tailed *Z* test.

1978 nationwide Gallup poll. We found that belief in the paranormal was much higher among the students than among the American public at large. Table 2 shows the percentage differences between the two groups for these 10 phenomena. The largest difference was for "Ghosts," 64 percent for the students and only 11 percent for the American public (even in England, where haunted houses abound, the figure is only 20 percent). The second highest difference was for "Clairvoyance," 71 percent versus 24 percent, followed by "Precognition," 79 percent versus 37 percent, and "Telepathy," 86 percent versus 51 percent (Gallup used the term "ESP," which I think most people associate with telepathy). "Bigfoot" and "Loch Ness Monster" tie for fifth place with 32 percent versus 13 percent for each phenomenon, followed by "Astrology," 46 percent versus 29 percent; and "Flying Saucers," 68 percent versus 57 percent. (Gallup used the term "UFOs"; while most people assoicate "UFOs" with possible extraterrestrial visitations, the term can and does have different interpretations, so we decided to use the more blatant term "Flying Saucers.") As can be seen in Table 2, all of these percentage differences, with the exception of the "Flying Saucer"/"UFO" item, are statistically significant.

Belief in the paranormal (which here includes UFOs, Bigfoot, and the Loch Ness monster) was far higher among the students, but phenomena with religious overtones rated higher among the public at large. Belief in "Demons/Devils" was 21 percent among the students, compared to a nationwide figure of 39 percent (Gallup referred to "Devils" only). While this difference is not statistically significant, the percentage difference for "Angels" is: 32 percent of the students believed in angels, the nationwide figure being 54 percent (surpassed only by "UFOs" with 57 percent). This seems to verify that high religious conviction is not necessarily accompanied by extreme belief in paranormal phenomena, or vice versa (see Bainbridge and Stark, *SI*, Summer 1980). This proposition is supported by the fact that, while the public at large is less inclined to believe in psychic phenomena, 62 percent believe in "Life after Death." This is a Gallup question we did not include in our questionnaire, although we did ask about "Reincarnation."

Although meaningless from a statistical perspective, it is interesting to look at individual questionnaires. One student accepted all the phenomena listed except poltergeists. Another accepted all but Bigfoot. One accepted astral-projection but not sleepwalking. The foundations for such rationalizations must remain an enigma.

The average age of the students was 25.5 years; 61 percent were female, 39 percent male. Females tended to be slightly more politically conservative. Males were slightly more religiously conservative. Complete statistical analyses of all these data will be completed at some future time.

We plan to administer the same questionnaire to students in psychology classes and compare results.

It is important to remember that the subjects in the survey discussed above are not average citizens or even average students; they are students who specifically enrolled in a class on the occult, and it is not unreasonable to assume that they had an above-average interest in the paranormal. Whether they held the beliefs reflected in the questionnaires because of the experiences they were exposed to in class or whether they took the course because they held such beliefs is impossible to answer with certainty. It may be a combination of both, but I strongly suspect that it was more often the latter.

Before concluding, I want to make a brief personal statement. There were times when I felt that sitting and listening to such irrationality for an entire semester (a total of 37 hours) constituted a complete waste of time. I know now it was not. I have participated in many "normal" academic activities, but this experience was unique in that it provided a close, personal, inside view of a perspective alien to the rationalist. The fact that it occurred in an academic setting, where rationality is supposedly the order of the day, made the experience even more sobering.

I thank Paul R. Turner for his cooperation, particularly in his permitting the administration of the questionnaire, and James E. King for his assistance in the design of the questionnaire. ●

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Belief in ESP Among Psychologists

Vernon R. Padgett, Victor A. Benassi, and Barry F. Singer

In a recent letter to *Science* magazine, Charles Tart (1980) pointed out that 65 percent of American college professors think ESP is "a likely possibility" or "an established fact," according to a survey by Wagner and Monnet (1979). But *which* professors believe this about ESP?

Psychologists ranked lowest among academic disciplines on an extraordinary-belief scale, according to Alcock (1975). Evans (1973) reported that psychologists tend to be "frightfully goatish." Finally, the Wagner and Monnet survey gives the following breakdown by academic discipline of those giving a positive response to the question "Do you consider ESP a likely possibility?" or "Do you consider ESP an established fact?":

Humanities, arts and education	73-79%
Social science, excluding psychologists	66%
Natural science	55%
Psychologists	34%

Why do psychologists rank lowest? It may be, first, because psychologists are most familiar with the experimental literature, which in over a half century has failed to demonstrate the existence of ESP, as even a noted parapsychologist admits (Beloff 1978); second, because psychologists tend to know about factors influencing belief formation; and, third, because many psychologists, including these authors, have themselves caused

Vernon Padgett is a doctoral candidate in social psychology at Ohio State University. Victor Benassi is an associate professor, and Barry Singer is a professor, in the Department of Psychology at California State University.

college students to believe in the existence of several "psychic phenomena" simply by performing sleight-of-hand magic tricks such as those described in Randi's *Magic of Uri Geller* (1975).

Following Tart's argument that those who are most educated are those who set the norms in society, it is interesting to note that those who should know most about ESP are those who believe in it least.

Why do the majority of people, as Tart points out, believe in ESP? One reason might be that their sources of information are poor. This appears to be borne out by the Wagner and Monnet survey: newspapers are given as the primary source of information on ESP. Research done by Benassi and Singer provides a second example. College students were asked to list their sources of information on ESP. "Scientific media" was frequently cited. When asked what these were, the *Reader's Digest, National Enquirer,* and von Daniken's *Chariots of the Gods?* were the sources most frequently named.

Another reason for belief in ESP is the heuristic biases that limit our ability to process information accurately (Tversky and Kahneman 1973; Nisbett and Ross 1980). These may account for a substantial amount of our occult belief.

The existence of ESP may someday be demonstrated—but it will be with independently replicable laboratory experiments, not by polls of college professors. It may be "normal" to believe in ESP, but what is "normal" is not necessarily true.

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Bigfoot on the Loose: Or How to Create a Legend

Paul Kurtz

Bigfoot enthusiasts were given a big boost recently by the news, proclaimed nationwide, that the physical remains of a Bigfoot had finally been discovered. The media displayed photographs of the head and hair samples of the creature—also called Sasquatch, Yeti, or the Abominable Snowman in various parts of the world—and there were also reports of "eyewitness accounts" of his appearance.

What was heralded as the "Bigfoot find" of the century was made in Lewiston, New York, near the Canadian border, not far from the infamous Love Canal in Niagara Falls, home of the Hooker Chemical Company dump. I had been reading about this latest Bigfoot case in the Western New York newspapers and hearing about it on radio and TV but remained dubious and rather amused until I received a phone call on March 11 from Jon Beckjord, who announced that he was in the area and wanted CSICOP to see first-hand the startling new evidence that he had uncovered. This, he said, should satisfy Bigfoot skeptics.

Beckjord, a free-lance photographer, former TV cameraman, and "amateur anthropologist," is head of "Project Bigfoot" (formerly "Project Grendel"), a Seattle-based organization devoted to publicizing the existence of the elusive creature. CSICOP had had continuing dialogue with Beckjord for several months prior to his call. He had been claiming definitive evidence for Bigfoot and had requested us to appoint a special blue-ribbon subcommittee to pursue the inquiry. Last year members of CSICOP had received several letters from Beckjord. I asked him to send us the best photographic evidence he had of Bigfoot and told him that if there was even the slightest bit of evidence we would be glad to look into the

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Paul Kurtz is chairman of CSICOP and a professor of philosophy at the State University of New York at Buffalo.

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matter further. Our position was that the existence of such an animal was within the realm of possibility but had not yet been confirmed by hard evidence.

Beckjord sent us a number of photographs taken by him in the Sierra Nevada. Bigfoot, Big Mama, and Little Bruno allegedly appeared in the pictures in a clump of trees in the background. The 30 students in my Philosophy of the Paranormal and Parapsychology class at the State University of New York at Buffalo pored over the photographs and listened to tapes by Beckjord describing his "evidence." Not one could see anything in the photographs that remotely resembled what Beckjord claimed to see—they saw only fuzzy clumps of leaves. Indeed, almost any part of the photographs could be singled out and creatures read into them—like the interpretations of Rorschach ink-blots. Beckjord had sent similar samples to SKEPTICAL INQUIRER editor Kendrick Frazier and to William Bainbridge, a scientific consultant of CSICOP from the Seattle area. The same photos were also examined by the CSICOP Executive Council last December. All drew a similar negative conclusion. I told Beckjord that what he had sent us did not present a shred of prima facie evidence. In our view, Beckjord saw in the photographs what he wanted to see.

Hence his telephone call. He claimed that at long last he had something solid. I was doubtful, for what I had seen in the papers and on the television news looked again like the product of a fanciful imagination. Nevertheless, we decided to conduct an investigation in Lewiston the next day. With me were two scientific consultants of CSICOP, professors Charles Cazeau (geologist) and Stuart D. Scott, Jr. (anthropologist), from the State University of New York at Buffalo. Both were authors of the new book *Exploring the Unknown* and had done research on Bigfoot.

Beckjord helped us to bring together some of the principals in the case: the hunters who stumbled upon the remains of "Bigfoot," three members of the County Sheriff's Department who had intensively investigated the case, including reports of alleged "sightings" by people in the area, interested members of the Lewiston police and fire departments, and actual "eyewitnesses" of Bigfoot. We all met at Moradian's Cafe and then moved to the town hall, where we continued our inquiry for the better part of five hours.

The "facts" as presented were that two young hunters had come across the carcass of an animal near Lutts Road in September 1978. Its body was badly decomposed and had been apparently eaten by scavengers. They were intrigued by its grimace—its teeth were protruding. They cut off the head and paws and brought them to the Lewiston Fire Department. Someone asked if it might be Bigfoot—having seen the so-called doc-

Head of Lewiston bear

Map of Lewiston area

umentary "In Search of Bigfoot" on TV. Those on duty had said that it was a bear; the head was photographed and left outside, and then apparently taken away by dogs or racoons. The carcass was taken in a bushel basket to the Buffalo Museum of Science by the Conservation Department. Arthur Clark, assistant curator, and James Dorr, chief preparator (taxidermist), examined the macerated remains. Dorr, who had dealt with hundreds of bears, said it was undoubtedly a black bear, and Clark concurred. Evidently it had been hunted and killed in Canada, butchered and dressed, and then dumped near Lewiston. Clark indicated that several similar specimens have turned up in various dumps in the area over the years.

The incident had been forgotten until the Spring of 1980 when a teenage boy from Lewiston heard Beckjord on a radio interview, from Montreal, saying that if anyone had any evidence of Bigfoot to phone him on the "Bigfoot Hot Line." The young lad did, telling him about the find, and relating that he had himself seen Bigfoot. Beckjord immediately contacted the news media in Western New York—and the news began to leak out nationwide. Beckjord himself later appeared on the scene to confirm the find.

Beckjord, a bearded, tall, heavy-set man, has devoted his life to proving that Bigfoot is real. He told us that Bigfoots have been seen in all 50 states (he recently investigated sightings in Florida) but that the Lewiston find was "the best on record." Here, he affirmed, was decisive evidence to settle the question. At the hearing, which I informally chaired, we interviewed the hunters, who told us what they found. One, apparently a novice, said that it did not look like a bear because of its "facial contortions." A fireman who photographed the head thought that it did. A part-time policeman, Peter Filicetti, who is writing a book on Bigfoot, was

quoted in the press as saying that he did not know what it was, only to confound the "mystery."

Added to this were the rumors that there had been for some time many reports of Bigfoot sightings in the Lewiston area. Members of the Sheriff's Department, which is under the direction of William Tollhurst, said that they had attempted to track down every such call. They had *never* encountered the strange footprints or the reported droppings in the places depicted by the callers. One deputy reported that there had been a Tuscarora Indian legend of a creature in the area. He had spent many nights in the woods hoping to track it down but never encountered anything remotely resembling it. We questioned two so-called eyewitnesses, whose testimony turned out to be unreliable. Roger, the lad who had phoned Beckjord in Montreal, claimed he heard grunting noises in the woods, saw numerous tracks in the snow, and saw what he thought were the shoulders and head of a creature in the distance. When asked if anyone was with him to corroborate his account, he replied that on one occasion a friend of his was. Where was his friend? He had moved out of town and Roger did not have his address or telephone number! Since it had been dark, he could give few additional details of what he saw.

An elderly woman presented hearsay evidence about an experience of her daughter-in-law, who was not present at the hearing. Some time ago she had been cross-country skiing and had seen something crouching in the distance, but she thought it was a dog. Beckjord interjected at this point that it was undoubtedly Bigfoot.

Professor Scott pointed out that for Bigfoot to have existed for a period of time in the Lewiston area, a fairly well-populated area cut off on one side by a river and on another by a lake, there would have had to be a breeding population of at least a few. But there have been no multiple sightings. Someone countered that perhaps there was only one creature, a mutant, caused by the Love Canal chemical dump!

Beckjord kept insisting that the creature uncovered by the hunters was not a bear—though he had never seen the remains, only a photograph of the head. Its incisor teeth were somewhat longer than a bear's, he said—the measurements made from the photograph dispute that. It had no ears, he claimed—they seem to have been chewed off by predators and the remains were badly decomposed. Its hair was different, he added—James Dorr said that it was definitely bear hair. The snout was not sufficiently elongated, he maintained—all of our observations indicated that it was. When we asked Beckjord why no bones or skeletal remains had ever been found of Bigfoot here or elsewhere, he speculated that Bigfoot was a "paranormal" phenomenon; perhaps the creatures came from UFOs and were using psychic means to block our detecting them.

NEWS EXCLUSIVE

BIGFOOT PHOTOS BAFFLE EXPERTS

Family of bizarre creatures may be roaming the wilds

Headline from *Weekly World News*

As we were leaving the town hall, Beckjord brought out his movie projector and showed the Roger Patterson "Bigfoot" film that had been widely shown on TV. The film, hotly disputed, depicted Bigfoot looking more like a man dressed in a monkey suit than anything else. In any case, it had little to do with the Lewiston case. Scott, Cazeau, and I concluded that what had been uncovered was most likely a bear and nothing more than that, and the Sheriff's Department concurred.

The next day, Beckjord called Professor Scott in "red-faced embarrassment." It turns out that he had since interviewed the owner of the Lutts Road property where the remains were found. The owner reported that the land had been used as an informal dump: there were sofa cushions, an old freezer, and other garbage. Since late 1978 the owner had noticed a clear plastic garbage bag with a bear's carcass inside. This tends to confirm the conclusion that a bear had been hunted and its skinned carcass discarded on the dump. Indeed, Beckjord said that the few scraps of hair that he dug out of the ground might have come from other carcasses that had been discarded there as well. He said, "I have found that other hides have been dumped at the Lutts Road site in the past few years . . . Thus I regret (I really do) that the hairs may, or may not, have come from the beast. I cannot be sure, and I wish I could." Beckjord then admitted that the Museum of Science was probably correct in its view that it was a bear.

Beckjord left town and was on his way to New York City. We were just about ready to close the Lewiston Bigfoot case—until early on the morning of April 1, when Beckjord was featured on the ABC-TV network "Good Morning, America" program. There he was, as big as ever, showing "samples of the hair" that he dug up at the Lewiston site and photographs of the severed head and claiming that these were strong evidence of Bigfoot.

We were horrified at the spectacle and wrote to Elton Rule, president of ABC, complaining about the lack of balanced treatment and requesting

that they present the public with the other side of the story. Equal time was denied. The reply received from the "talent coordinator," Catherine Vasapoli, who booked the program, stated: "I was very distresed to hear of your complaint that we misled the audience with false evidence, primarily because I booked Mr. Beckjord only as a human interest story." On April 29, the tabloid *Weekly World News* featured a "news exclusive" on their front page: "Bigfoot Photos Baffle Experts." Beckjord is quoted as saying, "We are very excited about the find. These photos could really turn science on its head if we can authenticate them."

And thus the story of the Lewiston "Bigfoot," like those of UFOs and other strange paranormal claims, seems to be well on its way to becoming an "established fact," indeed a legend. Defended by a dedicated believer, it has been taken up and sensationalized by some irresponsible members of the media. Although some newspapers in Western New York have briefly reported CSICOP's negative findings, until now the national media have not, and the public still has not had an opportunity to hear the full facts of the case. ●

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Parental Expectations of Miracles: A Case Study

Robert A. Steiner

Parents throughout the world claim that their children can bend spoons. However, when I heard the claim that a child could actually effect teleportation of soy sauce, my interest was aroused.

I had given a "demonstration of ESP" at the University of California's Berkeley campus. The show was sponsored by the Undergraduate Psychology Association, and I was able to convince most of the audience that I was indeed a "psychic." At the conclusion of the performance, I told them that I was a magician and that everything they had seen had been done by trickery.

Professors and students alike have found this to be an interesting method to stimulate thinking about the existence of extrasensory perception. (See Scot Morris, "Believing in ESP: Effects of Dehoaxing," *SI*, Spring 1980.) In the classroom, when a professor explains that the burden of proof of a psychic occurrence is upon the one making the claim, the students understand it intellectually and recognize it as logically valid. However, they simply don't accept it, because there's so much "evidence" of the existence of "powers."

When watching my actor/magician-playing-psychic presentation, they see things they "know" cannot be done by normal means, things they "know" only psychics can do. After all, how could I possibly know what picture was drawn on the slip of paper chosen blindly by a student from an envelope containing a dozen or so different pictures, none of which I'd seen? How can the cheering of the audience possibly influence the fall of a coin, other than psychokinetically?

At the conclusion of the show, a man by the name of Elijah Cole approached me to discuss his remarkable daughter. Mr. Cole, who lives in East Richmond Heights, California, is a likable person. His enthusiasm could not be contained as he told me that his 11-year-old daughter, Felicia,

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Robert A. Steiner is a magician and a member of CSICOP's Education Subcommittee.

could do the following: change the color of 7-Up in an unopened bottle; cause water to drip from an empty cup; cut plastic with her mind; bend spoons with her mind; hold an actual conversation with a parrot; and, last, but far from least, could teleport soy sauce. The soy sauce would be, uh, resting at one end of the table. Then Felicia, using her mind, would cause drops of it to appear on the other side of the table.

After speaking to Mr. Cole for a brief while, I arrived at a personal conclusion about his belief structure. I was convinced that he was sincere and truly believed that his daughter could do these things. That conclusion remained unchanged and was reinforced during my later association with him. I told him that perhaps he has an intelligent daughter who is having a ball fooling her old man. He assured me that that was not the case.

Two days later, he telephoned me at home. He wanted to follow up on our conversation. I offered to visit with him and his daughter under certain conditions: (1) No money would change hands in any event. (2) If I discovered trickery, I would want a letter from him for backup, and I would be free to write an article. I would not use actual names. (3) If nothing happened, I would want a letter with similar stipulations. (4) If I actually observed a spoon bending, while no one was touching or controlling it, I would write to James Randi about what I had seen. (During my presentation at Berkeley, I had mentioned Randi's standing $10,000 offer for any psychic happening.)

Cole questioned my credibility; i.e., what credence would Randi give to my statement that a spoon had thusly bent? I assured him that, if I told Randi I had personally observed a spoon psychically bent, Randi would certainly re-evaluate some of his previous assumptions.

Although Cole considered my offer to be eminently fair, he wanted to bypass the middleman. He chose to put everything on the record and go directly for Randi's ten grand, with the implicit accompanying validation by CSICOP.

To make the story short, Randi was interested. He was coming out to San Francisco for the American Association for the Advancement of Science annual meeting in January 1980, where he was to participate in the seminar on science and pseudoscience. Since the Coles and I live just across the bay, Randi suggested we set up the meeting in my home.

Prior to the meeting, we had told Cole that we wanted a statement in advance detailing precisely what Felicia would attempt to do. Such a statement never came. Randi and I nonetheless agreed to go ahead with a meeting, as a preliminary test. We would then discuss the formal attempt for the $10,000 payment.

On January 2, 1980, the day of the meeting, I completed my shopping. My home was stocked with bottles of 7-Up, plastic container tops (circular

polyethylene covers, such as those on margarine containers, which were similar to those Cole had sent to Randi as "proof" of Felicia's "powers"), spoons, soy sauce, and, of course, James Randi.

Felicia arrived promptly at 4 P.M., the scheduled time, with her mother and father. They brought with them a plastic 7-Up bottle containing a blue liquid, a container of orange liquid, plastic container tops with holes in them, bent and broken silverware, and a tiny ceramic cup.

It was an interesting study in personalities. Cole was confident and self-assured, apparently fully expecting to walk out $10,000 richer. There were, however, some telltale signs that he had been having a bit of a bad time with Felicia.

Mrs. Cole was intelligent and cheerful. During the course of the meeting, it became evident that she had been feeling guilty and intimidated for some time about this whole experience. She told us: *"I've never been there when it happened!"*

Mrs. Cole's honest admission of never having witnessed the purported miracles of her daughter had been implicitly challenged. Her daughter claimed to have done it. Her husband had "seen" it. Felicia's grandmother had "seen" it. The professional psychologist to whom they were taking Felicia believed in such phenomena and advised that the girl should be encouraged to expand herself in this area, the Coles told us. (We never learned the name of the psychologist, nor was there any desire on the part of the Coles to involve that person further in our discussion.)

Felicia had not wanted to come to the meeting. In a telephone conversation the day before, she informed me: "I don't like his [Randi's] attitude." Cole, who said he had brought Felicia to be tested at a university before professors and had touted far and wide the legend of her "powers," persuaded Felicia to come to the meeting.

On entering my home, Felicia acted as if she had been forced into the situation. She obviously didn't want to have anything to do with it. Judging from a brief conversation with her, it was obvious to me that she was quite an intelligent child.

The pressure Cole put on Felicia to perform was in marked contrast to the gentleness exhibited by Randi. Randi allowed her to perform whatever she chose, whenever she chose. He made clear that this was only an informal observation of what had been claimed by her father and by herself. Depending upon the outcome of this informal observation of Felicia's abilities, we might discuss arranging a formal, proper test.

With strong coaching by her father, Felicia took a spoon in one hand, held it for about ten seconds, then put it down. She shook her head slowly and sadly from side to side, then informed us that it didn't work. It was evident to Randi and me that she wasn't expecting the spoon to bend. As

her feet were nervously shuffling, her focus had been largely upon Randi and me, observing how much attention we were paying to what she was doing. Randi told her that her attempt had been very brief and that she could take her time. She did not want to try again.

Next came an attempt to cut the plastic cover with her mind. She picked up the cover in one hand, appeared to be concentrating on it, and knitted her eyebrows, as if trying to punch a hole through it with her mind. Nothing happened.

Then an attempt was made to color the 7-Up in the unopened bottle. She sat and stared at the bottle for about 30 seconds. Nothing happened.

Next came the attempt to make water drip from the dry, tiny cup they had brought. Nothing happened.

Felicia looked over at her father, fixed him with a stare, and exclaimed, "Don't make eyebrows!" This referred to the puzzled, troubled expression on Cole's face each time Felicia's "powers" failed. They were the expressions one would expect to be on the face of a man who had believed he had $10,000 plus worldwide acclaim within his grasp and then saw it all rapidly slipping away.

This provided the perfect excuse for Cole to be put out of the room. Other "psychics" have been known to show annoyance at observers when the "powers" don't work. Cole decided to allow Felicia to try everything while he was not present. In past "psychic" episodes with her, he had absented himself from the room so that the miracles could take place without risk of possible interference from his "negative vibrations." While Cole sat outside in their car, Felicia stayed behind with Mrs. Cole, Randi, and me. Felicia then ran through all the attempts again. Nothing happened.

Re-enter Mr. Cole. Exit Mrs. Cole. More attempts. Nothing happened. Re-enter Mrs. Cole. There never was an attempt made at teleportation of soy sauce.

At that point, Cole suggested that Felicia go into the bathroom to try the experiments. In the past he had found she worked much better that way, when not being directly observed. She entered the bathroom with a normal spoon, closed the door, and soon emerged with a bent spoon. She seemed disappointed that this feat was not met with wild applause by the experimenters.

Next a plastic cover went into the bathroom with Felicia, and the door was closed behind her. When she returned, the cover had a hole in it. It appeared that a bend had been made in the cover. It also appeared that a sharp object, such as a tooth, had been pushed into the lid in order to puncture it.

At this point, Randi posed three direct questions to Felicia.

Randi: "Felicia, when you were in the bathroom, did you bend the spoon with your hands, or use any pressure?"

Felicia replied: "No. I did it with my mind."

Randi: "Felicia, did you bend that plastic top back and forth, or use your teeth, or use any force to make the hole?"

Felicia: "No. I did it with my mind."

Randi: "Felicia, when you color the 7-Up, do you open the bottles?"

Felicia: "No. I put food coloring into the 7-Up [long pause] with my mind."

During the course of the meeting, discussion had revealed that Cole had purchased food coloring in the supermarket in order that Felicia might put it into the "unopened" 7-Up bottles "with her mind." The 7-Up bottles were plastic, with screw-on tops. These tops can easily be removed and placed back on; with just a modicum of care, the lower portion of the top will not snap off, thus leaving no evidence that the top has been removed and replaced. In earlier conversations, we had learned from Cole that the coloring of the 7-Up in the "unopened" bottle generally took place over a period of about three days.

After Felicia gave those three specific answers to Randi's direct questions, Randi turned his attention to Mr. and Mrs. Cole. In a quiet, gentle, forthright manner, he informed them that, in his opinion, they had been deceived by their daughter, as had many parents with whom he had come in contact on investigations of similar matters.

Randi then addressed Felicia: "Felicia, you are doing a shameful thing, deceiving your parents like that. This is something you will have to live with." His entire manner was not that of scolding, but rather of an instructive nature, in an attempt to have this young, intelligent child re-evaluate her behavior. Randi was keenly aware of the importance of eliminating such role-playing from Felicia's young life.

At the conclusion, lest there be any doubt, I assured the Coles that I agreed with everything Randi had said.

The Coles left shortly afterward. Mr. Cole and Felicia were obviously not happy. Mrs. Cole was the last one to leave. I think I detected some signs of relief on her part. She seemed to be lingering and considering talking with us a bit more; but she left without any discussion. Randi and I speculated on what would follow.

Six days later Cole called me. He told me that Randi was stupid: "He's so skeptical." He said that I should have had hidden cameras in my bathroom. That would have proved that Felicia bent the spoon psychically.

He said that we do not give the psychic the benefit of the doubt. He explained the concept of circumstantial evidence and how it is even

allowed in a court of law to acquit an accused murderer.

I replied that I thought the presumption of innocence was a valid concept to apply to someone accused of committing a crime but that I did not think the presumption of psychic power was equally valid.

He replied that this was a biased attitude. "That's not open-minded. You saw the manifestations of what she did. He [Randi] believes that's impossible. Bob, you have that position, too. You have to give the psychic the same benefit as the skeptic."

I inquired as to Mrs. Cole's present position. Cole replied: "She doesn't want Felicia to be subjected to any more tests. She doesn't care who believes and who doesn't."

One is tempted to speculate on what causes a situation like this. The conclusion seems to be that Cole was enthralled with the idea and that Felicia cashed in on the enormous attention she received from her father, aunts, uncles, and grandmother by playing the psychic and by following her father's instructions.

A less plausible explanation is that this 11-year-old child independently came up with the concept of "teleportation of soy sauce." But in one of our conversations Cole said: "We were sitting at the table, and I said, 'Felicia, can you teleport that soy sauce over here?' "

When parents believe in impossible things and instruct their children in them, the children's reasoning ability can be threatened. When the parents' beliefs are extended to the point of expectation of performance by the children, it would seem that the child has four alternatives:

1. Accept the belief in the impossible things and pretend that performance has taken place. This perpetuates belief in irrationality at an accelerated rate.
2. Accept belief in the impossible things, try, and fail. This inability to live up to the expectations of the parents causes pain and trauma for the child, with accompanying loss of self-esteem.
3. Lie, cheat, and deceive the parents into believing that the child can actually perform the impossible feats. The resultant potential psychological damage to the child should be self-evident.
4. The fourth alternative is probably at once the best and the most difficult for a young child: to recognize that the parents believe in impossible, untrue things, and to resolve to dismiss the parental expectations as impossible, and therefore unreasonable.

The best overall conclusion is obviously for the parents to critically analyze their own beliefs and discard those that are unrealistic. In the absence of that, the Felicias of the world will continue to be faced with complex choices that are far too difficult to be inflicted upon a young child. ●

Downfall of a Would-Be Psychic

Donald H. McBurney and Jack K. Greenberg

Steve Shaw bends spoons, reads minds, and performs other amazing feats. He has lived in England, South Africa, and Australia, besides western Pennsylvania. Would I be willing to go on television to test him? I (D. McB.) was talking with Susan Michaels of the "Pittsburgh 2day" show, which is broadcast over station KDKA. Susan was obviously taken by Steve's story and his naive personality. Sound like anybody familiar? If you guessed Uri Geller, give yourself an A+, because Shaw says he developed his powers after seeing Geller on TV. I explained to Susan, who is the assistant producer of the show, that I was a psychologist with a skeptical interest in ESP as a hobby, and that a magician was needed to do a test properly. Nevertheless, she wanted me because of my credibility as a professor and also because she felt, wisely, that Steve would balk at the presence of a magician.

After some negotiation, she agreed that magician Jack Greenberg could hang around the set, posing as a crew member. Jack and I set up the conditions for the spoon-bending, which essentially consisted in having Susan obtain six stainless-steel spoons, carefully marking them, and keeping them locked up until just before the show. No one else was to know their whereabouts. Steve was not to touch the spoons before the show, although he was to be permitted to see them from a few feet away. After many conversations with Susan and Jack, we were ready to go. Both Steve and his agent called me in a veiled attempt to find out what I knew about such things. Steve wanted to see me the night before the show. I agreed to meet him for lunch the next day at 11:30 A.M., just before the show.

Just like the wolf meeting the three little pigs in Farmer Brown's garden, Steve showed up at the station much earlier than scheduled. But

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Donald McBurney is professor of psychology at the University of Pittsburgh and teaches a course in "ESP and Pop Psychology."
Jack Greenberg is a professional magician and a measurement and evaluation consultant in Pittsburgh.

Jack, anticipating this, was there by 9:30 A.M. He spooked around as Steve badgered everyone in sight for a look at the spoons. Much to the credit of the people at KDKA, Steve got nowhere.

Our lunch was as predictable as the McDonald's fare we ate. He tried to probe my degree of sophistication. I detected that he had done some homework on me (as I had done on him). Just before the show, he asked hosts Patrice King and Wayne Van Dyne to go out into the hallway with him. Each of them was asked to think of a word and write it inside a circle on a paper. After ostentatiously folding the paper and tearing it up (the center-tear fold), he had a sudden call of nature. Jack dove into the men's room right behind him to find him stuffing paper into his pocket.

The show itself was something of an anticlimax. He "managed" to choose which film canister out of a dozen or so had a nickel in it and they chatted about how he discovered his powers. This canister trick was so obvious that the hosts and the producer detected how he did it, but they kept mum. We felt that foiling him on this trick would lead to his passing on the spoons, and after all of our work we wanted him to try this. I came on after a commercial break and talked a bit with the hosts. When asked whether I thought Shaw had supernatural powers, I said that many people bent spoons. Some call themselves magicians and others, mentalists. The difference is in their fees. Shaw said, when I asked him, that he would not use magic in bending the spoons. He was absolutely correct, because the spoons did not bend. He gave up after a minute or two, obviously shaken. He also decided not to try to bend the three-inch masonry nails that Susan had provided for him. After the show, when he was performing for two members of the audience, we noticed that he had his own three-inch masonry nails, of a slightly different cast from the ones that had been provided. Not surprisingly, one of these had a pronounced bend in it by the time we came upon the impromptu show.

I felt sorry for Shaw. After all the trouble Jack, Susan, and I had gone to, I was hoping that something interesting would happen. I felt a little guilty about tricking him, even though he would have tricked us if we had let him. He returned to Washington, Pennsylvania, and to his job mopping the floors of the local hospital, having wasted his chance to impress the largest Pittsburgh TV audience for that time-slot. He, like many other magicians, will try to make the big time by copying his self-proclaimed inspiration, Uri Geller. Perhaps he should have studied Geller's career more closely, because most of what I suggested in the way of controls was borrowed from Randi's book *The Magic of Uri Geller*.

There is no doubt that this episode will be replayed many times, as long as some people will want to believe in the paranormal and others are willing to gull them. ●

Parapsychology Research: Interview with Ray Hyman

Jeffrey Mishlove

Ray Hyman is a professor of psychology at the University of Oregon who has a long-standing professional interest in the psychology of belief systems. He also is respected as a well-informed and fair-minded critic of parapsychology research and is a member of the Executive Council of the Committee for the Scientific Investigation of Claims of the Paranormal. In August 1979 he attended, for the first time, a convention of the Parapsychological Association. He came away with some impressions and observations that may surprise some. He was interviewed at the convention by Jeffrey Mishlove, who has received a Ph.D. in parapsychology at the University of California-Berkeley.

Mishlove: For a long time you have been associated with a point of view that is skeptical of the claims of parapsychology. I'm very interested in getting your overall impressions of the Parapsychological Association convention and of the field of parapsychology as a whole—bearing in mind the fact that this year represents the tenth anniversary of the membership of the Parapsychological Association in the American Association for the Advancement of Science.

Hyman: Coming here as a skeptic, I would say that my overwhelming impression is the high quality of the research I have heard reported and the impressive insights and awareness of problems demonstrated by the people I have met. I expected a lot of this, because I have done some reading in the field recently—but still I am pleasantly surprised that I am constantly being challenged by things that are not easy to explain away or dismiss on ordinary or superficial grounds that critics use. There are a few in attendance here who fit the stereotype of what critics believe to be the worst of parapsychology. They are people who are almost anti-science.

They make many statements and claims. But I see they are an embarrassment to the other people here who are trying to establish a legitimate scientific field, and there don't seem to be any more of these people here than at any other convention of scientists I might attend. It's unfortunate that it's easy to characterize the whole field by a few people like this. Generally speaking, I am very much impressed with most of the people I have met and their high quality of thought. Another big surprise to me is that I find myself in almost 100 percent agreement with most of the people with whom I have talked. They are skeptical. No one here is an out-and-out believer, or else they wouldn't be doing science.

Mishlove: What's your image of the future of parapsychology?

Hyman: I've discussed this with a lot of people here. It's an interesting topic. One scenario is that, in fact, if it does succeed in achieving some of its goals, it will put itself out of business. If it does attain the repeatable experiment, if it does find conditions under which anyone, skeptic or believer, can achieve positive results, then one possibility is that we would no longer be talking about paranormal phenomena. Parapsychology would be absorbed into various branches of physics and psychology and what have you. Another scenario, the one Martin Johnson has in mind, is that, at the moment, the field is in the same state that alchemy was. Alchemy was never a science, but it led to a new science—chemistry. He sees that parapsychology may be on the verge of doing this. The hope is that a whole new science will come out of its success—rather than its being absorbed into science as it now is.

Mishlove: Would you say that as a result of this convention you expect parapsychologists to be working more closely with members of the so-called loyal opposition—critics from outside the field.

Hyman: Unfortunately, I don't think that will be the case. My own criticisms, as a responsible critic, are of things that parapsychologists don't have control over. The way I see it, parapsychologists are doing their darnedest to do the best kind of science, in the best tradition of science. The problem is that they don't have a good phenomenon by the hand. If they do have one, it is a very elusive thing. It is very weak. It is very sporadic. They don't have a handle on it. Until they have repeatable phenomena that can be seen my most people, regardless of their belief, they really aren't going to have any chance at all of being accepted by science. It's not clear that even if they had that they would be accepted by science. At the moment, they are being rejected by most scientists on grounds that have nothing to

do with what they are doing now. Most scientists don't even know what is going on in parapsychology. I had to come here and read the literature, to actually go out of my way, to be up on just some of what is going on. So one possibility is that, even if parapsychology met the overt criticisms of critics who are trying to be responsible, that would not overcome the hidden reasons for objecting to it. There are strong emotional factors involved in why people don't even want to accept the implications of what might come out of this.

Mishlove: You don't regard the membership of the Parapsychological Association in the AAAS as really being an acceptance of the field by science. You think that scientists are still, by and large, hostile?

Hyman: No question about it. It's hard to say which scientists. A recent survey shows that a majority of academics, regardless of field, except for psychology, are willing to say that parapsychology should be given a chance and that there may be a good chance that something will come out of it. This is quite the reverse of what people expect. But it is pretty clear that the power structure of science, which controls the journals and the funding, is still mostly hostile toward parapsychology. I would say that seems to be the case. Their hostility and their rejection of parapsychology probably has very little to do with rational grounds or with knowing what is going on.

Mishlove: Do you think that, if some of these hostile individuals had been having the kind of experience that you have been having at this convention, that might change their attitude?

Hyman: I would like to believe so. I think it would. If the people who are hostile allowed themselves to be exposed to a convention like this, I think they would have to change their grounds for objection rather dramatically. They would have to come up with some new reasons.

Mishlove: Also, you mentioned the fact that parapsychology has not come up with a repeatable experiment. At this convention it was argued that what they have attained is something they call "statistical" or "probabilistic" repeatability, where maybe one experiment in three does attain significant results. You're not impressed by that argument?

Hyman: I don't believe it is true. I disagree very respectfully with John Palmer on this, and some others—and many parapsychologists here agree with me. We don't even have that statistical repeatability. What would be

statistical repeatability would be to specify a subset of conditions where, given these conditions, we can say that even 60 percent, 50 percent, or 20 percent of the time we will get results. We don't have even that. I think that most people here believe that there are conditions under which you would never get results, such as, with certain kinds of experimenters, perhaps. They don't know what these conditions are, but they believe that there are conditions that are conducive to results and other conditions that are not.

Mishlove: I think that about does it; unless you have another point that you would like to make?

Hyman: Some very interesting thoughts have occurred to me that I have discussed with different people here. Another point that may be worth making is that I, as a critic, a responsible critic, am mostly interested in learning ways in which the mind works, and the way in which science works, so that we can better learn from our mistakes and not repeat mistakes we have made in the past, and better guard against self-deception, which I am very much interested in. And I would say that this is a goal that almost every responsible parapsychologist here has. I find that I have the same goals that they have. I think we all have the common goal of wanting to make sure that, whatever we are doing, we are doing the best science we can, that we are protecting ourselves in the best way we can from known ways of fooling ourselves, and that we can learn other ways in which we might be fooling ourselves. I think that is a goal shared by everyone here. And I think that, in the best of worlds, critical organizations like the one that I belong to would be lining up to work with the Parapsychological Association on these common goals. I know that parapsychologists are just as much embarrassed by false claims for the paranormal and by people who hang on and try to exploit the Parapsychological Association. I would hope that in the best of worlds we can get together and share these common goals.

Postscript

We invited Ray Hyman to write a brief postscript to the interview.—Ed.

My remarks, as set down in the interview, were made with no preparation and were completely spontaneous. Naturally, if I had had time to think about the questions, I would have phrased my answers differently and taken greater care to avoid any misinterpretatation of my position. But I am willing to let my remarks stand as they are, because they are, in fact, what I did say at the time.

I think it is well known that I do not believe that ESP or PK exists or has been scientifically established. On the other hand, I find it dismaying that most of the criticism of current parapsychological research is uninformed and misrepresents what is actually taking place. Such misplaced criticism is bad both for the development of parapsychology and for the attainment of a sound evaluation by the skeptic. If those who take it upon themselves to attack parapsychological claims would also look fairly and carefully at what it is they are attacking, we might be much further along today in understanding how it is that so many highly qualified investigators can be putting forth claims that we skeptics find hard to believe.

I believe that, if many of my fellow critics had been with me at the Parapsychological Association meetings and listened to the many papers, they would have to agree with me that the quality of the design and the sophistication of the statistics were generally quite high. The discussions and criticisms of each other's papers by the parapsychologists were of high quality and quite penetrating. And the parapsychologists seem to take as much interest as we skeptics do in finding loopholes, and possible alternative explanations, in each other's work.

I am not making a case for less criticism of parapsychology. On the contrary, I believe that parapsychology needs *more* criticism. But I also think the criticism needs to be relevant and deal with the evidence at its best.

– *Ray Hyman*

Book Reviews

Saga America. By Barry Fell. Times Books, New York, 1980. 425 pp. $15.00.

Reviewed by John R. Cole

In this sequel to *America, B.C.,* Barry Fell expands upon his claim to have discovered linguistic and archaeological proof that the Americas were colonized by a vast array of Europeans, Africans, and Asians a thousand years before Columbus. This is contrary to established evidence, but Fell more or less ignores all of the counterevidence and even suggests that most of the establishment has come around to his side since his first book was published. In fact, scholars in linguistics, archaeology, and history have scorned his conclusions and methods—reinforcing a tinge of martyrdom, which Fell and his friends wear like a badge of honor. After all, they laughed at Galileo and Pasteur, too. But, of course, they also laughed at Laurel and Hardy.

Like Tolkien, Fell has invented a self-contained fantasy world, but Fell represents *his* as scientific reality. On the whole, I find Fell's fantasy less consistent and believable. It is certainly possible that there is an ancient site or inscription or remote colony of Old World origin to be found in America, but Fell portrays pre-Columbian America as a hotbed of trade, settlement, and semi-urbanization that simply could not have escaped archaeologists' notice were there any evidence for it. Part of the Fell chronology for America is as follows:

325-250 B.C.	Carthaginian and Phoenician trade.
264-241 B.C.	Libyan Greeks integrate; Carthage trade ends.
250-100 B.C.	European trade interrupted; North America mapped; token coins issued because of coin shortage.
100 B.C.-A.D. 400	Iberian-Roman traders; Roman currency adopted.
69 and 132	Two waves of Jewish refugees.
450	North African Christians arrive.
500	Libyan science and math flourish in western U.S.

John R. Cole, formerly adjunct assistant professor of anthropology at the University of Massachusetts, joined the faculty of the University of Northern Iowa in Cedar Falls in September.

700 onward	Islamic inscriptions and Christian Celts in west.
1000	Vikings explore much of the U.S.
1341	Vinland Norse revert to "paganism" and "barbarism."
1398	Last Norse-Celtic voyage to America.
1524	Verrazano finds blondes in Rhode Island.

Except for an ephemeral Viking settlement in Canada, this all seems to be poppycock.

Fell appeals to multiple ethnic prejudices, arguing that America was settled by Scandinavians, Celts, Tartars, Romans, Greeks, Egyptians, Jews, Libyans, and Cretans and traders from China, Carthage, Spain, Black Africa, and the Islamic world. Native Americans become also-rans (or joiners), in his story despite his claims to be glorifying them by association with Old World cultures. Most Americans come from the Old World, and Fell tells just-so stories about their "roots" in ancient America (Are Native American land claims therefore supposed to be moot?).

Fell's evidence consists of stone structures, ancient coins, and "inscriptions" on tablets, boulders, cliffs, and so on, found in America. Jeremiah Epstein, of the University of Texas, recently traced virtually all relevant American coin reports in the January 1980 *Current Anthropology*. He showed them to be explainable as recently lost collectors items, mistaken identities, or hoaxes. Fell's "megalithic stone structures" were investigated in 1978 by Vermont State Archaeologist Giovanna Neudorfer, and in 1979 by my University of Massachusetts crew. We found *no* evidence for ancient-voyager origins and considerable evidence for historic construction, such as chimney supports, spring houses, and root cellars. Such inscriptions as the Kensington Stone, Spirit Pond stones, and Iowa Tablets have long been exposed as hoaxes, but Fell cites many of them as if they had never been challenged (although he does in fact note that the Kensington Stone has been widely discredited, surprisingly). Other of his inscriptions appear to me from their photos to be fraudulent, and others are natural scratches or the chips and grooves from farm machinery. Some may be misinterpreted modern grafitti, and many are Native American petroglyphs with no transoceanic connections. Fell blurs them all together and translates them without justification. Failing to acknowledge or answer criticism is simply antiscientific, not revolutionary. Reviving discredited arguments uncritically and advancing new ones as fact rather than speculation is — unfortunate.

Fell traces a hodgepodge of supposedly "borrowed" European words in "Algonquin" (actually a family of different languages) and other Native American tongues, but linguists have shown him wrong. On page 187 he actually notes a Smithsonian publication by "Goddard and Fitzhugh 1978" but does not include it in his bibliography, thus keeping more or less intact his record of ignoring critics. It is available from Ives Goddard, Curator of Linguistics at the Smithsonian Institution in Washington, and interested readers should request a copy.

Matter of factly writing of the "Wyoming Iberian bank," and its branches, Fell mentions Gaelic settlers in Oklahoma, Jews in Arkansas, and Greeks in Colorado. That ancient Christians settled America is "unimpeachable," he says, devoting a

chapter to America's Christianization long before Columbus. He then writes of the fall back into "paganism," implying that once-Christian America was simply reclaimed by later European conquerors. So much for cultural relativism; non-Christians here were simply back-sliders.

His "Wyoming bank" consists of some round petroglyphs quite in the local Native American tradition. He claims to match them up with Old World *coins*. Like most of his comparisons, they do not even *look* similar, except for the simplest, easily reinvented designs—except to true believers. There is no evidence given of actual banking or trade. He matches words, sounds, and material objects with supposed Old World twins out of context, sloppily, and out of time sequence. Mexican and Egyptian pyramids, for example, are separated by more than a thousand *years* as well as miles.

Fell is a prophet in an archaeological cult. In the name of science he tells people they should believe in him and share in the secrets of civilization. Disdainful of the experts, he gives easy answers to complex questions. He and his followers become better experts than establishment scholars. He writes of endorsements by the world's leading linguists and historians—but his readers are not told that with one exception they are prominent only in his odd circle, right or wrong. (The exception is Raymond Dart, discoverer of Australopithecus in the 1920s.) His evidence is illusory, erroneous, and unsubstantiated, but he raises a powerful call to belief. Science, on the other hand, depends upon skepticism, testing, and theory—seemingly alien concepts to Fell.

Saga America is either a delusion or a cynical exploitation of people's honest enthusiasm for the romance of archaeology by a prophet for profit. To the considerable extent the book camouflages or denigrates the accomplishments of Native Americans (and serious scholars), it is regrettable indeed. If it sparks interest in America's past sufficient to inspire readers to seek out better accounts, suspicions aroused, the book may have some value at least as a counterexample. Read *The Mound-Builders* by Robert Silverberg, *Lost Tribes and Sunken Continents* by Robert Wauchope, *Exploring the Unknown* by Charles Cazeau and Stuart Scott, and Martin Gardner's *Fads and Fallacies in the Name of Science* as antidotes, and take this book as the placebo it is. Fell to the contrary, North American and New England prehistory are exciting.

The book is copiously illustrated with photos of Fell and friends and often with sketches and photos of *copies* of original artifacts with no scales provided. One often cannot judge Fell's comparisons (sketches of Roman coins equated with sketches of elements of Wyoming petroglyphs, for example). There is *very* poor bibliographic documentation, with one-sided, quirky references to largely privately published material. The text aggravatingly blends into photo captions, making it hard to follow. Otherwise it is well-written, except on the level of logic and fair-dealing with the subject and reader.

Saga America belongs in library collections next to Bermuda Triangle, Bridey Murphy, and fad and cult items. It is a serious, if inadvertent, sociological document of a peculiar genre of wishful thinking, and it is worth reading to that extent.

But thoughtful readers will come to Barry Fell not to praise him. ●

Pole Shift. By John White. Doubleday, Garden City, N.Y. 1980. 410 pp. $14.00.

Reviewed by Robert Schadewald

Will the earth's axis shift radically sometime in the next twenty years, sending miles-high walls of sea water washing over the continents? John White, "author, editor and educator in the fields of parascience and consciousness research," thinks it might. As he puts it, "It is the central premise of this book that enough data exist to warrant a full-scale examination of the question in its various guises, even though the data sometimes come from unorthodox sources in forms that admittedly are quasi-scientific or nonscientific . . ."

As White shows, the idea of catastrophic pole shifts goes back to the eighteenth-century naturalist Comte Buffon. When catastrophic geology had been largely abandoned, uniformitarians like Lord Kelvin theorized that the poles wander slowly over time. Some scientists thought the latter hyopthesis best explained fossils of tropical creatures found in polar regions. The concept of pole shifts, rapid or slow, has always attracted alternative scientists, too. In the late nineteenth and early twentieth centuries, such theorists produced a whole genre—at least 17 works—of pole-shift literature, of which White is only dimly aware.

White rests his own case for an impending pole shift on four pillars. First, what has happened before might happen again, and he offers evidence of past pole shifts. Second, numerous "modern researchers" predict pole shifts on "scientific" grounds. Third, several psychics have predicted a pole shift by the end of this century. Finally, many ancient traditions seem to prophesy future pole-shifts.

After giving some geologic and geophysical facts about the earth in Chapter 1, White gets rolling in Chapter 2: "The Riddle of the Frozen Mammoths." Those poor old mammoths have previously been dragged from their icy graves to testify in favor of the hollow-earth theory, collisions with comets, the capture of moons, and the collapse of a canopy of ice that surrounded the earth before the Noachian Flood. They were associated with the tilting pole at least as early as 1889, in Marshal Wheeler's *The Earth—Its Third Motion* (White doesn't mention this), and they inspired this century's leading pole-shift theorists.

What do the frozen mammoths tell us about past catastrophes? Not much, it would seem. As White shows, carbon-14 dates of mammoth carcasses demonstrate that the animals perished more or less randomly over a period of perhaps 40,000 years. An article cited by White, "Frozen Mammoths from Siberia Bring Ices Ages to Vivid Life," by John Massey Stewart (*Smithsonian*, December 1977), illustrates seven possible mechanisms by which individual mammoths could have perished and become entombed in permafrost. White doesn't mention this, although he briefly discusses noncatastrophic explanations for the mammoths' demise. He seems to prefer the judgment of Fortean biologist Ivan T. Sanderson, who insisted that the mammoths perished in gigantic cataclysms.

White finds further evidence for past pole-shifts in lost civilizations. Do the legends of Atlantis, Lemuria, Agartha, etc., recall civilizations destroyed by past

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Robert Schadewald is a science writer with a strong interest in the offbeat. He's currently working on a book on "alternative science."

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pole-shifts? Was the famous Piri Re'is map, drawn in 1513, based on originals drawn by cartographers of lost civilizations who mapped Antarctica when it was ice-free? What do reports of man-made artifacts found in coal, rocks, etc., really mean? One feels the evidence building.

To those interested in alternative science, White's second section, "What Modern Researchers Have to Say," will be most interesting. Many of these theorists are not well known.

Hugh Auchincloss Brown, who White calls "the father of scientific pole-shift predictions," died November 9, 1975, at age 96. Brown was an electrical engineer who graduated from Columbia University in 1900. By his own account, he became interested in the frozen mammoths in 1911, and he soon suspected that a shift of the earth's poles caused their demise. When the polar ice-caps become too massive, he theorized, they cause the earth to topple on its axis, establishing new poles, such that the ice caps wind up in the equatorial zone. The phenomena accompanying such a pole shift bring disaster to living things. Mammoths peacefully grazing in semitropical regions could end up freezing their trunks off in the Arctic—if they survived the tidal waves, hurricanes, and earthquakes, that is.

Brown went public with his fears in a 1948 work entitled *Popular Awakening Concerning the Impending Flood.* He promoted his ideas in *Fate* and other magazines up until his death. The most complete exposition of his views is in his *Cataclysms of the Earth*, published in 1967 and still available in paperback from Freedeeds Associates.

Although White calls *Cataclysms of the Earth* "generally satisfying as a work of scientific literature," he notes a number of problems with it. Besides making at least one blunder in his calculations, Brown claims that the last pole-shift was only 7,000 years ago. But there is compelling evidence that the Antarctic ice-cap is about 20 million years old. White fails to mention some of Brown's more remarkable theories, which might help a reader gauge the value of Brown's scientific work. For instance, Brown claimed that the earth's rotation is caused by "celestial radiant energy," that chlorophyll literally converts photons into matter, that "sand appears to be created in the shallow seas directly from radiant energy," and that the earth will someday become a supernova.

Charles Hapgood and Immanuel Velikovsky are perhaps better known to readers in other contexts. Besides being the author of *Path of the Pole*, which makes a case for noncatastrophic pole-shifts taking thousands of years, Hapgood is known for his aforementioned theories about the Piri Re'is map, spelled out in his *Maps of the Ancient Sea Kings.* Velikovsky's postulated rapid pole-shifts are an integral part of his astronomical collision theory,

Two of White's other modern researchers deserve mention here. During the 1950s, Adam Barber advertised his *Coming Disaster Worse than the H-Bomb* in *Fate* magazine and elsewhere. The book is largely a collage of newspaper clippings reproduced on execrable newsprint. Barber's pole-shift arguments are based on his experiments with gyroscopes. Emil Sepic's grossly overpriced pamphlet is still advertised in *Fate.* Though his theory seems clearly derived from Barber's—both postulate a "minor orbit" for the earth, like a Ptolemaic epicycle—Sepic insists that he came up with it independently. Both theorists predict that the "tilt" sign will light up within about twenty years.

After presenting the scientific evidence, White examines pole-shift predictions made by psychics. Leading them all is Edgar Cayce, the seer of Virginia Beach. As

early as 1932, Cayce suggested that the earth's axis would shift catastrophically before the century is out. He apparently believed that the shift would begin slowly about 1936 and culminate violently around 2000. For the period of 1958 to 1998, he predicted that much of California and the southern Atlantic coast would be submerged in the sea and that numerous other unpleasant things would happen.

Considering Cayce's reputation among the psychically inclined, it's perhaps not surprising that other psychics have made remarkably similar predictions. Psychics Aron Abrahamsen and Paul Solomon agree on a pole shift for the end of this century. (Abrahamsen hedges: if mankind repents between 1981 and mid-1982, the earth may yet be saved.) Solomon and others agree with Cayce that the Great Lakes will soon drain through the Mississippi, that sunken lands will arise in the Atlantic, and so on. Not all the predictors agree, of course, and White points out that the psychics he discusses have less than perfect track records.

In his fourth section, White examines five prophetic sources: American Indian traditions, the Bible, Nostradamus, Lemurian knowledge as revealed by the Stelle group in Illinois, and Madame Blavatsky's *Secret Doctrine*. He concludes that the Bible doesn't prophesy a pole shift but that the other sources might.

White's last chapter asks the question, "Does science support the predictions and prophecies?" One might expect him to build on the work of Peter Warlow, the most scientific of his modern researchers, but Warlow is only mentioned in passing. White finally rejects some of the contradictory evidence he has assembled. He notes that Thomas Gold suggested a mechanism for slow pole-shifts, and others have suggested trigger mechanisms for more rapid shifts. He brings in the alternative physics of Rudolf Steiner and Wilhelm Reich and also psychotronic and hyper-space weapons based on the work of Nikola Tesla. He concludes that strong evidence indicates that the equator has been in its present position for about 60 million years. He suggests, however, that full 180° pole shifts, which would not have altered the equator's position, might have taken place!

Having answered his rhetorical question in the affirmative, White concludes that the subject is "worthy, truly worthy, of the most concerted and full-scale investigation by the entire scientific and scholarly community . . . If we avoid or ignore the possibility of a pole shift, we will have only ourselves to blame should there be a cataclysmic repeat of the 'myth' of Atlantis."

One suspects that the scientific community will conclude otherwise. White's chain of evidence is constructed almost exclusively of weak links, and those few links he forges from sound evidence are severed by Occam's Razor: a simpler explanation accounts for the data. The minor wanderings of the poles about their mean positions have long been monitored with interest. They may yet yield information useful in earthquake prediction, and so on, but they don't suggest that the poles are about to do anything drastic. As for past motions of the poles, signs of their geographical wanderings—such as glacial striations in African rocks—seem to be accounted for by continental drift. White repeatedly implies that scientists are prejudiced, and he is right. They instinctively prefer this sort of evidence to predictions by reincarnated Lemurians. ●

UFO . . . Contact from the Pleiades, vol. 1. By Lee J. Elders, Brit Nilsson-Elders, and Thomas K. Welch. Genesis III Products, Ltd., 3032 32nd St., Phoenix, Ariz., 1979. 72 pp. $24.95.

Reviewed by David A. Schroth

In the constellation Taurus there is a beautiful cluster of stars known as the Pleiades. Ten years ago UFO investigator John Keel wrote: "If flying saucers actually exist as extraterrestrial spaceships, then the Pleiades might deserve a place high on the list of possible origins." He based that assessment on references to the Pleiades in the Bible, the legends of North American Indians, and the folklore of European cultures and Australian aborigines.

Was Keel perchance on the right track? No doubt about it, according to this new book. *UFO . . . Contact From the Pleiades* presents the story of Swiss farmer Eduard "Billy" Meier, who claims he has been contacted—telepathically and "in the flesh" (or whatever)—by creatures from the planet "Erra" in the Pleiades star cluster; contacted not just once, but more than 130 times, beginning in January 1975.

Actually it is more a picture-album than a book, consisting mostly of about two dozen full-page "UFO" photographs, all in color, on high-quality stock. It has no table of contents, page numbers, references, bibliography, or index, and not more than 20 full pages of text.

We are told that Meier's claims are substantiated by, among other things, hundreds of clear (daylight) photographs, sound recordings, "crystals" given him by the Pleiadians, "landing tracks" left by their spaceships, and thousands of pages of notes and "wisdom" courtesy of these benevolent aliens. Readers from whom such "evidence" is not fully convincing may want to direct a few questions, not to the Pleiadians, but to the people who investigated this story and are now promoting it as true.

The chief investigator is identified as Lt. Col. Wendelle Stevens (USAF-Ret.). Many articles by Stevens have appeared in the popular UFO literature. In one of them he suggested that UFOs may have established an underwater base of operations in the Atlantic off the coast of Argentina. Articles by Stevens dealing with the Meier case appeared in *Argosy UFO* and *Saga UFO Report* in 1977 and 1978. He characterized Meier's UFO photographs as his "primary proof."

According to the book (see also *SI*, Summer 1980, pp. 15-16), Stevens began his investigation in August 1976. Seven months later he wrote as follows regarding the objects in Meier's photographs: "Lest anyone suggest models, these ships are obviously of some larger size, like 15 feet in diameter . . ." And in the book he offers the same opinion: "There was no way that models could have been used . . . Models are definitely out of the question!"

How did the investigators arrive at that conclusion? Did they obtain or construct model "saucers" and try to duplicate Meier's pictures? Did they make even a single test photograph using such models? If such an experiment was ever conducted, it is not mentioned anywhere in the book or in Stevens's two previous

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David A. Schroth is an associate member of CSICOP's UFO Subcommittee.

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articles. Nor are any such test photos included for comparision with those taken by Meier.

But tossing models in the air may be too simple and old-fashioned for "scientific UFOlogists" (as supersophisticated saucer investigators describe themselves). "Computer-enhanced photoanalysis" sounds much more authoritative. Thus we are told how computer analysis of Meier's photographs has precluded such photo-faking techniques as paste-ups and suspended and hand-tossed models. Who did the analysis? Unnamed "selected specialists in various fields," "consultants," "specialists," and "many eminent scientists."

(Of course some readers who are fanatical about details may desire more specific information about when, where, and by whom such "analysis" was performed. But UFO proponents do not enjoy having their claims questioned. When reporters asked for evidence to support the allegation that the U.S. Air Force is concealing parts of flying saucers and the cadavers of their alien occupants, UFO buffs dismissed such questions as "hostile."

Whatever Stevens and his colleagues did in the course of their investigation obviously did not deter the Pleiadians from keeping in touch with Meier. According to Stevens, Meier "has even ridden in the spacecraft with the ufonauts on several occasions" and "has made more than 800 photographs . . ."

That certainly is a remarkable achievement. Unfortunately, it seems that Meier never could remember to take any of his friends or a few local reporters along with him to witness and verify his conversations with the Pleiadians—or to enlist additional photographers at several locations in order to photograph the saucers simultaneously from different angles or to photograph any of the Pleiadian spaceships while they were resting on terra firma. (In every picture in the book, the "saucer" is photographed against open sky.)

One omission in particular came as a great disappointment to this reviewer. It appears—judging by the absence of such photos—that Meier neglected to ask the aliens if they would be kind enough to pose for one or two snapshots by standing on the top deck of one of their saucers and waving to him. Admittedly this may sound ridiculous to some readers. But why—after befriending this humble Swiss farmer—would the aliens decline such a simple request? After all, who can forget how a group of flying-saucer occupants waved to witnesses on the ground in the famous 1959 New Guinea "close encounter" case? (Unfortunately, the witnesses in that case did not have enough wits to take even a single photograph.)

Eventually the investigators interviewed some of Meier's friends who claimed they had observed and occasionally photographed the arrival and departure of the Pleiadian spaceships. (None of them is named in the book, nor are any of the published saucer photos credited to anyone but Meier.) The stories they told "were remarkably detailed and would demand a substantial imagination to create individually."

Statements like this are common in the UFO literature. They reflect a tendency that prevails among UFO proponents and "ancient astronaut" theorists alike—a tendency to underestimate the enormous inventiveness and resourcefulness of human imagination. How do the investigators know a person would need "a substantial imagination" to invent a detailed UFO story?

Are they familiar with the Leroy, Kansas, "close encounter" hoax of 1897? It was a "remarkably detailed" story. Are they aware of recent experiments reported by A.H. Lawson, demonstrating how easily people can invent "remarkably

detailed" stories of encounters with alien creatures? Are they considering the effects of thirty years of mass-media propagation of the *idea* and *imagery* of "UFOs" *qua* extraterrestrial spaceships?

Next we are told that the interviews with Meier's alleged co-witnesses were tape-recorded for Psychological Stress Evaluator (PSE) testing. The outcome? "It was no surprise that these witnesses passed the PSE test with flying colors." (No surprise? Of course not! For aliens from the Pleiades to contact an Earthman 130 times does not "surprise" UFO believers in the least. But to imagine that an Earthman might concoct a series of tall tales—*that* would be a traumatic "surprise" indeed.)

The authors describe the PSE as "the most intricate, accurate, and sophisticated form" of lie-detection available. This appraisal is not shared by other UFO investigators, who advise against using the PSE except with extreme caution and an understanding of its many technical limitations. (See *SI*, Summer 1980.) Whether interviews with Meier himself were ever analyzed by the PSE, the authors do not say.

What about the marks on the grass and the "landing tracks" left by the Pleiadian spaceships? Don't those things lend impressive support to Meier's story? "To the experts, these tracks represent a curious phenomenon not easily duplicated or explained," the authors assert. Like the photoanalysts mentioned earlier, these "experts" are not named. Evidently they were not experienced UFO investigators. If they were, they would know that in previous reports of "physical traces" allegedly caused by UFOs the "traces" could be attributed either to hoaxers or to natural causes not understood by eager-believer saucer investigators.

Whether fact or fiction, the "Meier case' is sure to enter the annals of contactology. In 1967, J. Allen Hynek pointed out how some persons claim to have seen UFOs not just once but on many occasions. Hynek, who was then the U.S Air Force's chief consultant on UFO matters, described such persons as "repeaters." "A person with so little understanding of statistics and probability as to think that one person can have dozens of UFO sightings while a great many other people (indeed, the majority) have never in their lives seen anything resembling a UFO, can be identified at once as utterly unreliable," Hynek wrote.

In addition to his many contacts with the Pleiadians, Meier reports having had several UFO and telepathic experiences during his childhood. He thus qualifies as a "repeater"—indeed, perhaps the all-time champion repeater among thousands of contenders.

Two additional problems should be pointed out. In the text and on the book jacket, the objects in Meier's photographs are stated positively to be extraterrestrial spaceships. The investigators therefore conclude that this case requires "a new category all its own . . . Identified Flying Objects." But if that is true, then whence the word "UFO" in the book's title? As Dr. Hynek has often remarked, the "U" in UFO means "unidentified"—not extraterrestrial.

Finally, Stevens concluded his first article by inviting "anyone to disprove our claim that these pictures are of a real Unidentified Flying Object." Likewise in the book: After presenting "the facts" of the case, the authors "invite anyone to disprove them any way they can . . ." Perhaps it is the "inherent weakness" of the extraterrestrial hypothesis that forces UFO advocates "to shift the burden of proof onto the skeptics, who are required to *prove* that UFOs are *not* from another world," as UFO debunker Philip J. Klass argued in 1968. If Klass was wrong, and if

the evidence for extraterrestrial saucers is as great as UFO advocates claim it is, then why—as in the Meier case—are they still using the same tactic twelve years and thousands of "UFO sightings" later.

On whom does the burden of proof rest when a person submits photographs of alleged flying saucers? "It is, unquestionably, on the person submitting the picture, and not on the recipient," wrote Hynek in an article in *Popular Photography* (March 1968). Hynek thus affirms the principle that the burden of proof is always on those who assert positive claims.

No one is obligated to "disprove" Meier's story any more than the U.S. Air Force is obligated to prove that it is not concealing a warehouse full of crashed saucers and humanoid cadavers.

Since the book is designated "Volume I," the author-investigators apparently plan to release additional data or photographs in a second volume at some future date. Perhaps it will include the documentation that allegedly supports this (literally) far-our story but which cannot be found in Volume I. •

Books In Progress

For years we've heard laments that, in comparison with the number of books unscrupulously exploiting paranormal and fringe-science claims, few books examining these claims in a responsible, critical way get published. I don't know whether that situation is now changing; but, for whatever the reasons, there are now a refreshing number of books in progress that attempt to cast the light of fact, reason, and clear thinking on these subjects. Here's a brief rundown:

University of Oregon psychologist **Ray Hyman** is at work on a book on the psychology of false beliefs. It will present case histories of outstanding scholars and scientists who supported belief systems in the face of apparently strong counterevidence and counterarguments. It will deal with such things as N-rays, the horse known as Clever Hans, and Alfred Russel Wallace's spiritualism. Parapsychology will be treated in one chapter as a borderline case. "The idea," says Hyman, "is to use each case to bring out one or more principles of human thinking and scientific reasoning that can result in trapping an intelligent person into defending a false system . . .The overall goal is to show how the psychology of thinking can account for much pathological science and pseudoscience. And an important lesson is that we cannot trust a claim just because a respected and clearly brilliant individual has endorsed it." The book is still in the writing stage. Publication by W. H. Freeman is probably at least a year off.

UCLA astronomer **George Abell** and Cal State-Long Beach psychologist **Barry Singer** are editors of *Science and the Paranormal*, to be released soon by Scribner's. It's a collection of mostly new articles on a variety of paranormal topics by prominent scientists and writers.

York University psychologist **James E. Alcock** has completed the manuscript

of a book focusing on "whether or not parapsychology should be classified as a protoscience or a pseudoscience." He analyzes parapsychology in terms of its (lack of) theoretical structure, its methodology, its close association with other metaphysical belief systems, and so on. There will also be a chapter on the psychology of experience and belief. The book will be published by Pergamon in 1981.

Prolific British writers **Patrick Moore** and **Robert Forrest** are at work on a follow-up to Moore's *Can You Speak Venusian?* "We'll be covering some well-known ground," says Forrest, "like the hollow earthism of le Poer Trench, pyramid energy, the Bermuda Triangle, the moon is an alien spaceship, UFO contactees, and Velikovsky & Co. But we've dredged up some more out-of-the-way stuff like: the Great Pyramid is a hydraulic ram pump; Stonehenge, a planetarium or giant orrery; the hidden harmony of the solar system; discovering unknown planets by astrology; divination by moles; Britain is Atlantis; and time travel." They expect the book to be finished by the end of the year.

Robert Sheaffer's book on UFOs is in production, due from Prometheus Books probably in early 1981. It is a critical examination of the UFO phenomenon, with special emphasis given to the UFO movement and its social aspects. "Some classic 'unsolved' cases that I'll examine in depth are the Hill 'abduction,' the Jimmy Carter sighting, Exeter UFOs, and the New Zealand films." The new wave of "beyond reality" theories will also be examined.

James Oberg is working on a book (or books) on the folklore of the space age. "It's a survey of myths, hoaxes, and superstition surrounding the exploration of space, including the 'Great Galactic Ghoul,' the canals of Mars, the hollow earth and moon, astronaut UFO encounters, space visitors to Siberia in 1908, Russia's 'jellyfish' UFO, claims that spaceflights were faked, Velikovskian planetary predictions, the 'Jupiter effect,' radio signals from space, and the Sirius mystery."

Daniel Cohen is writing *The Great Airship Mystery* (his tentative title) for release by Dodd, Mead in spring or fall 1981. It is a description and analysis of the 1896-97 airship "flap." The airship "mystery" predates "flying saucers" by half a century; but, as Cohen says, "there are so many elements in common that a great deal can be learned by studying the earlier phenomenon."

James Cornell of the Smithsonian Astrophysical Observatory is compiling material for what is tentatively titled *Grand Delusions: An Encyclopedia of Crackpotism.* "This will be a compendium—comprehensive, I hope—in encyclopedia format, of all the major crackpot schemes and pseudoscience claims since the invention of snake oil." Cornell says individual entries will vary in length from a few lines to a few pages. Scribner's is the likely publisher, probably in 1982.

Geologist **Charles Cazeau** and anthropologist **Stuart Scott** of SUNY-Buffalo have been asked by Plenum to do a follow-up to their recent *Exploring the Unknown* (see review in Spring 1980 *SI*). It will probably be called *The Unknown Revisited* and come out in 1982. Meanwhile the first book will go into paperback in March 1981.

L. Sprague de Camp, currently at work on the life of Robert E. Howard (creator of "Conan the Barbarian"), says his next work will be a science-fiction novel. But just about out (if not already) from Owlswick Press (Box 8243, Philadelphia 19101) is a volume called *The Ragged Edge of Science.* "This is a collection of articles published over the last thirty years on archaeological mysteries (and pseudomysteries), magic (Kabbalism, the Theosophist Leadbeater, the Satanist plot of 'Leo Taxil' in the late 19th century, the Lemurians of Mt. Shasta, etc.), and

pseudoscience (Donnelly, Velikovsky, Hinton's Fourth Dimension, von Däniken, and so forth)."

James Randi, whose book *Flim-Flam* was delayed until this fall, says he has enough material for a follow-up book. So those spared from his barbs in *Flim-Flam* probably shouldn't relax.

Carl Sagan's *Cosmos*, due out this fall from Random House in conjunction with a 13-part television series, deals at least peripherally with several pseudoscience topics. His *Broca's Brain*, which includes "Nightwalkers and Mystery Mongers: Sense and Nonsense at the Edge of Science," "White Dwarfs and Little Green Men," "Venus and Dr. Velikovsky," and "Norman Bloom, Messenger of God," was to be published as a Ballantine paperback this summer or fall.

And **Ronald Story's** *Guardians of the Universe?*, a further critique of ancient-astronaut-related claims, was released by St. Martin's Press in April. His first work, *The Space-Gods Revealed*, has been reprinted in a quality Harper & Row paperback.

All in all a rich garden of delights awaits the reader looking for some careful yet still readable examinations of the kinds of claims too often left to the sensationalizers and mystery mongers of the world.

If there are other critiques in progress that have escaped my notice, I'll be happy to describe them in a future column.

—Kendrick Frazier

Some Recent Books

Kusche, Larry. *The Disappearance of Flight 19.* Harper & Row, 1980, 211 pp. $12.95. The first book-length examination of what really happened to the five Avenger torpedo bombers lost on a training flight east of Florida in 1945. Kusche, who recounted the basic facts in a chapter in his 1975 book *The Bermuda Triangle Mystery—Solved*, here goes into all the issues in greater detail. He also portrays the life of flight leader Charles Taylor and his mother's attempts to overturn the verdict of official investigations that a series of mistakes in judgment by the disoriented Taylor during the flight was the primary cause of its loss at sea. That verdict, Kusche convincingly shows, is still correct. Kusche, a meticulous researcher, has here produced the authoritative account of the tragedy.

Rommel, Kenneth M., Jr. *Operation Animal Mutilation.* Santa Fe: District Attorney, First Judicial District (P.O. Box 2041, Santa Fe, N.M. 87501), 1980, 297 pp. $10.00 plus postage ($.81 bulk or $2.84 first class), paper. Report of the first federally funded study of the cattle-mutilation phenomenon finds it a manufactured mystery. (See News and Comment, p. 2.)

Story, Ronald D., ed. *The Encyclopedia of UFOs.* Garden City, N.Y.: Doubleday/Dolphin, 1980, 440 pp. $12.95, paper. An attempt at an even-handed reference guide to the UFO question.

—K.F.

Articles of Note

Carlson, John B., ed. Special issue of *Early Man* (Northwestern Archeology, P.O. Box 1499, Evanston, Ill. 60204), (2) (Spring 1980). An entire issue devoted to a guide for judging sensational claims of pre-Columbian voyages to the New World. Carlson writes the overview article. ("In 500 years," he concludes, "only one of the claims—a Norse presence in Newfoundland—has ever been verified.") John R. Cole writes on cult archaeology, Felicia Antonelli Holton dissects the claims of Barry Fell, and Peter Gorner reviews the debate over supposed plant evidence of early contact.

Epstein, Jeremiah. "Pre-Columbian Old World Coins in America." *Current Anthropology* 21 (February 1980):1-20. Examines every such claim and finds every one wanting: forgeries, hoaxes, and recent coin-losses seem to account for every case, devastating hyperdiffusionist claims calmly and rigorously.

Flew, Antony, "Parapsychology: Science or Pseudoscience?" *Pacific Philosophical Quarterly* 61:100-114, April 1980. Philosophical discussion of three differences between parapsychology and "all the established high-status sciences."

Gardner, Martin. "An Expense of Spirit." *New York Review of Books*, May 15, 1980, pp. 42-43. Critique of experimental design in an ESP experiment by Charles Tart and of Tart's rationalizations for failing to achieve the same results during a replication attempt after the flaws were corrected.

Gerlovich, Jack A., et al. "Creationism in Iowa." *Science* 208: 1208-10, June 13, 1980. Letter by eight Iowa scientists relating how their organizations worked to counter the 1979 creationist bill in the Iowa legislature.

Gorner, Peter, "Fell Swoops Down on History and Columbus Misses the Boat." *Chicago Tribune*, May 22, 1980. Lengthy, critical investigative report of the methods and claims of Barry Fell.

Gribbin, John. "Fools Rush In." *New Scientist*, April 10, 1980, pp. 102-103. Geophysics writer Gribbin, "hardly an apologist for scientific orthodoxy," as he notes, finds no merit in Immanuel Velikovsky's "curious mishmash of half-truths and inaccuracies." Velikovsky's "successful predictions" are based on an old trick, Gribbin observes. "[He] made so many predictions that some had to be right, as I might predict that either a Democrat or Republican would win the forthcoming U.S. presidential election."

———, "Jupiter's Noneffect." *Omni*, June 1980, p. 20. Retraction of "Jupiter effect" theory. See News and Comment in this issue.

Handler, Philip, "Public Doubts About Science." *Science* 108, June 6, 1980. Editorial by president of the National Academy of Sciences calling on scientists to confront "at every opportunity" antiscientific, antirationalistic trends ranging from gurus and astrology, to food fads, to unfounded allegations of environmental hazards.

Kelly, I.W. "Studies of Astrology and Personality." *Psychology* 16 (4) (Winter 1979-80): 25-32. Review of the behavioral evidence put forth for astrology concludes that it is a "science" (in that its claims are testable) consisting primarily of false and unsupported claims.

Klotz, Irving M. "The N-Ray Affair." *Scientific American*, May 1980, pp. 168-175. A recounting of the famous case in which an eminent French physicist "discovered" a new kind of radiation that turned out to be totally imaginary.

One of the classic cases of "pathological science."

Methvin, Eugene. "Scientology: Anatomy of a Frightening Cult." *Reader's Digest*, May 1980, pp. 86-91. Strong anticult article.

Moyer, Wayne A. "The Problem Won't Go Away." *BioScience*, March 1980, p. 147. Editorial by executive director of National Association of Biology Teachers urging biological scientists to take strong action to confront the distortions of creationists. "I am convinced that if we fail to confront this issue squarely and publicly, we will have an American equivalent of the Lysenko affair."

Schatzman, Morton. "Living with Apparitions." The *New York Times Magazine*, April 27, 1980, pp. 126 ff. Psychiatrist reports on his neurophysiological studies of effects on a woman patient of her imaginary but powerful visions of her father. Although her retina and pupil did not respond to light changes caused by the apparition's supposed presence, the brain waves from her visual cortex did show a visual evoked response.

Title trouble

The correct title of the C. E. M. Hansel book reviewed in our Spring 1980 issue is *ESP and Parapsychology: A Critical Re-evaluation* (not *Science and Parapsychology*). The mistake was ours.

Books in Print lists Cazeau and Scott's *Exploring the Unknown: Great Mysteries Reexamined*, also reviewed in our Spring issue, under the title *Great Mysteries of the Earth*.

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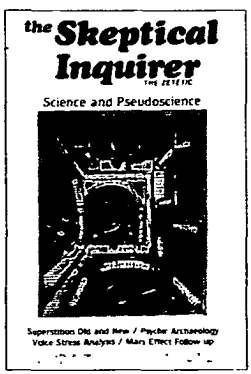

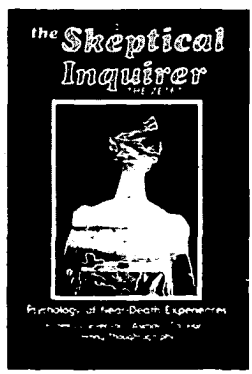

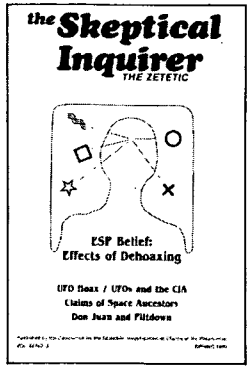

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From Our Readers

Chats with the Dead

Amongst the flood of occult literature polluting our bookshops, I have just come across *Voices in My Ear*, by D. Stokes ("with" L. Dearsley; Futura, 1980). The book is subtitled "The Autobiography of a Medium" and includes a number of large and improbable claims by the author, particularly the one of having cosy chats with the dead. It so happens that I had an opportunity to see the lady at work, and it is possible that your readers may be interested in my observations.

On December 21, 1979, between 10:30 and 11:55 P.M., the North East England ITV's Tyne Tees Television broadcast a program entitled "Friday Live." Mrs. Stokes was the "star" performer, and a number of persons, including C. E. M. Hansel, a member of your Committee, and myself, were invited to observe and comment. There was a large studio audience also present, and the program invited viewers to phone in. I provided myself with notepaper and clipboard and scribbled down my observations as fast as I could.

Mrs. Stokes started with some anecdotal claims and then began to receive signals from the departed. These, she claimed, took the form of spots of light visible (to her) over members of the studio audience. She declared, with confident aplomb, that a person in the studio—specifically that part of it on her right—was named, or associated with, a dead person named Taylor. (I subsequently counted: there are 15 columns of Taylors in the Newcastle telephone directory.) This Taylor was associated, she declared, with someone named "Elizabeth, or Liza, or Liz, or perhaps Edith," and had been dead "about 2 years."

A viewer telephoned in saying that this clearly must be her husband, who had no known connection with anybody named Elizabeth, or Liza, or Liz, or Edith, and who had been killed in war service in 1943. Mrs. Stokes assured the lady that her husband's death had been sudden and painless; and a little later the program link man asked me if I was not very impressed by this performance.

I replied, somewhat emphatically, to the effect that "in the studio" was not "out of the studio," that "connected with Elizabeth," etc., was not "unconnected with Elizabeth," etc., and that "2 years" was not an acceptable approximation of "36 years."

In the rather rambling discussions and demonstrations that followed, Mrs. Stokes failed to score a single hit. She did, however, claim to have performed a miracle in California. She declared that, whilst in San Francisco she suddenly received a signal from a man who had just been murdered, that she communicated this intelligence to the police, who were thereby enabled to find the departed in precisely the vehicle and circumstances she had described. You, or your readers, may be able to cast some light on this claim; but my inquiries have, so far, drawn blank.

However, the link man did tell us that her attempt to perform a similar miracle nearer home—to identify a notorious killer known as "the Yorkshire ripper"—had merely wasted a lot of valuable police man-hours and caused a certain amount of trouble to an entirely innocent citizen. Perhaps this city is inimical to magic.

I believe that I am not alone in having the (doubtless paranormal) experience that magic always seems to happen where I am not. I remain, as a well-known parapsychologist told me the other day, "blindly skeptical."

M. Hammerton
Head, Dept. of Psychology
Univ. of Newcastle upon Tyne
Newcastle upon Tyne, England

The "Mars effect" hypothesis

Congratulations to Kurtz, Zelen, Abell, and the Committee for having the fortitude to stick out the U.S. testing of Gauquelin's "Mars effect" hypothesis (Winter 1979-80, 19-63). As one who has long dealt with this issue, I know how difficult it can be!

I would like to make the following observations:

1. The Mars sector distribution of U.S. sports champions lies mainly within expected values, but is not remarkably flat. Note that sectors 6 and 10 (neither one of Gauquelin's "key" sectors) lie outside the 95% confidence level, deviating -35% and +38% from equi-chance distribution.

2. The Committee's use of the chi-square test of a binomial distribution is interesting; I'm pleased to see that Committee statisticians now agree that the binomial *z*-test is essentially the same as the chi-square test.

3. I am extremely surprised that the Committee did not use the Zelen test in states where birth data are available: certainly the large general population of many U.S. cities would permit the gathering of large data sampling of nonchampions for calculating observed nonchampion probabilities of key sector births for such locations.

4. I would point out once again that internal degrees of freedom plus astronomical and demographic variations give the problem setup an inherent variability, which means there will always be found *some* sample *somewhere* (as Gauquelin manages to do in his "post-selection" of "Star U.S. Sportsmen," pp. 37-38) that provides greater-than-expected variations in Gauquelin's key sectors.

5. I would again suggest that a most fruitful way of mathematically studying the Gauquelin problem is via computer simulation, using random generators to generate any specified number of births at random longitudes and latitudes within a specified area and time period (I've done preliminary studies of this technique: most interesting). Computer tapes of planetary locations could be used to accurately assign such randomly generated births to Gauquelin's celestial sectors.

6. Dennis Rawlins (p. 27) is quite correct in pointing out that Gauquelin's sectors are nothing more than Placidean Houses labeled in reverse, and therefore it is illogical to claim that Gauquelin's "cosmic biology" has nothing to do with traditional astrology.

7. Regarding Rawlins's continued attacks on my "strange assertion" that an "empirical" standard deviation should be used in the Gauquelin problem: I'm sorry he still does not understand the mathematical implications of internal degrees of freedom. I *had* been planning to attempt further explanation of this before an international conference, including simple graphic demonstrations, but Rawlins wrote the organizer attacking my expertise, and the conference was canceled at the last minute. I fail to understand what such censorship has to do with science. Instead of attacking others' ideas, I suggest Rawlins toss a die a few hundred times and compare the resulting empirical sample deviation with the theoretical multinomial standard deviation.

8. Gauquelin concluded that the

U.S. sportsmen data "strongly display the Mars effect" only after throwing out much of the data and selecting those birth categories which post hoc fit his hypothesis. This is not science but a blatant attempt to bias the sample toward the results he wants to find.

9. For instance, Gauquelin recommends that basketball players be deleted from the sample "because they do not show the Mars effect": a clear-cut case of choosing only the data that fit his hypothesis!

10. Finally, as Kurtz, Zelen, and Abell point out, when Gauquelin selects subsamples of athletes after their Mars sectors are known, he is introducing post hoc bias. Sophomore statistics students would get failing grades for such procedures.

To sum up, the Gauquelin "Mars effect" hypothesis presents a very difficult mathematical and statistical problem. When scientific censorship has permitted me to add my two cents' worth, I have repeatedly pointed out that internal degrees of freedom and astronomical and demographic variations make the problem setup far from the ideal multinomial problem it is being analyzed as.

Instead of endlessly collecting samples and post hoc subsamples of birth records, I suggest the problem could be much better studied using computer simulation and random number generators to generate unbiased random births.

Again, congratulations to the Committee for tackling a difficult chore.

Lawrence E. Jerome
San Jose, Calif.

A special offer

The article discussing my supposed views about UFOs in the Spring 1980 *SI*, like so much of the pseudoscientific anti-ufological literature, is based upon a false premise: in this case, that the original *Oakland Tribune* article was accurate. As it happens, it was almost completely inaccurate. One would think that a publication by a committee supposedly devoted to scientific investigation would have taken the little extra trouble to check the accuracy of the story. I recognize from past publications by members of the Committee that little details like getting the facts straight aren't considered very important.

Rather than spend far more time than you spent on the original article to correct all the false statements attributed to me, I would like to make a special offer to your readers to provide a copy of my latest four papers on UFOs (about 45,000 words) at a special reduced postage-paid price of only $2 instead of the list price of $3. One of the papers is my nonwinning entry in the Cutty Sark UFO competition. It should make an interesting contrast to James Oberg's unreferenced factless winner.

Incidentally, the title of my lecture has for more than a decade been "Flying Saucers *ARE* Real" and has never been "UFOs *Are* Real." As those who have attended my more than 500 college lectures in 48 states and 6 provinces can attest, I use facts not fiction. My fees have very frequently been less than $1,000. I presume you are well aware that the fees of two members of the CSICOP (Carl Sagan and Isaac Asimov) are in the $2,000 to $4,000 range. Obviously the pseudoscience of anti-ufology pays better than the science of ufology.

Checks should be made out to Stanton Friedman and sent to POB 502, Union City, CA 94587.

Stanton T. Friedman
Hayward, Calif.

A sense of wonder

Congratulations on the fine work in your Fall 1979 issue. As always it provided fascinating and, in some cases, rather depressing reading. Particularly frustrating were the

creationist arguments quoted in Godfrey's "Science and Evolution in the Public Eye"; all four arguments are much more detailed than anything of the sort I've seen before. Even without looking closely, one can see that they all share an amazing tendency to beg the question. Some of the premises are outright falsehoods, and in each the chains of reasoning are good for little but hilarity. Such antiscientific presentations would seem ideal for a beginning course in logic; I find it distressing that some of the comments made by class members, as reported, could be given by even the dimmest high school student.

As to Bainbridge's "In Search of Delusion: Television Pseudodocumentaries," I feel urged to leap to the defense of the field of science fiction. The author's conclusion that "belief may often come from the willing suspension of disbelief" is somewhat misleading. To my mind it is only a certain class of science-fiction readers (as always, well-represented at the World Convention) that do not strongly distinguish between belief and "suspension of disbelief." Among the Fellows of the CSICOP, I find at least two well-known science-fiction writers who typify in their work the sort of fiction the genre is best noted for. In the mainstream of the field, the tools of rational inquiry form the background of the narrative. The heart of any science-fiction story is "What if—?" An appreciation for the vast beauty and intrigue of our universe as it is known to modern science coupled with an imaginative turn of mind will naturally make one sympathetic toward this kind of writing. The driving concept of "the wonder of it all" in no way precludes adherence to the principles of scientific thought. I am perfectly willing to accept the notion of telepathy in a story (although your average *National Enquirer*-brand of ESP is a pretty trite item) but find myself unmistakably irritated to see it produced in a factual context. It is *because* we know that knowledge can only be acquired through the scientific method that we find science fiction challenging. Any cheap short-circuiting of that method in search of shallow thrills is merely a waste of ink. The best in science fiction gives us literally an imaginative glimpse of tomorrow's truths. Of course I will not pretend that all of the literature is worth reading, but in any event it deserves better than to be dismissed as dangerous. I think a "sense of wonder" is a critical ingredient in our exploration of the world around us. It is really a question of education if the ability to reason is lacking. The need for an emphasis on rational thought as a tool (for both science and everyday life) in education is critical indeed.

Jack Robinson
San Francisco, Calif.

William Sims Bainbridge replies:

Let me leap with Mr. Robinson to the defense of real science-fiction! My collection of 3,000 SF magazines, the articles I've published in Analog *magazine, and the half-completed manuscript of a new book on science fiction all testify to my love of this marvelous kind of literature. The big problem is that much popular "sci-fi" fails to meet the high scientific standards set by the best hard-science SF writers. But it is also true that much hogwash was spread by leading SF editors like John W. Campbell, Jr., and Ray Palmer. My first book,* The Spaceflight Revolution, *comes to a painfully ambivalent conclusion about the net educational and inspirational value of science fiction. Let's agree to do the safe thing about this question: more research.*

I appreciate his comments and agree that the rich field of science-fiction literature must not be condemned by the sins of sci-fi TV. My article does not *say that SF fans disproportionately believe in occultism. Rather, my respondents served as especially sensitive judges of the television shows studied.*

Natural mutilations

Several years ago I had an opportunity to drive for several hours, late at night, along a remote part of the Blue Ridge Parkway in Virginia. This is the best time to observe wildlife.

I came upon a dead deer beside the road. The place was alive with foxes—a dozen or more. They were feasting on the deer and only moved a few yards away when I stopped. The deer must not have been dead long—there was no sign or odor of decay.

But I was shocked—at first—when I saw which part of the deer had been eaten. Then I thought: "Of course! Why would a small animal try to gnaw on a hoof, or antler or the center of a deer's back?" It would make better progress by starting at the soft sexual openings. When I arrived, they had trimmed away the loose skin as clearly as a butcher would trim a ham.

I hadn't heard about the "mutilations" of cattle or I would have taken some pictures. I can't really say that such claims of intentional mutilations are overlooking the obvious, because I might not have guessed the real cause if I had not seen the foxes at work. However, I am surprised that Park Rangers have not tried to inject some truth into the long-running debate. Surely they must have had plenty of opportunity to see what I saw.

Since I first read the story of the "mutilations" in the *Zetetic*, I have recalled some rather sickening stories about dead bodies that have been exposed to wild creatures. Any boy from the bayou country can tell you about bodies—of animals or humans—that have been dragged from the water with the abdominal cavity full of catfish.

The fact is that small creatures in search of food are not concerned with human sensibilities. They eat the parts that are easiest to eat.

The idea of the FBI becoming involved (*SI*, Fall 1979) breaks me up. They've done some jackass things before, but this is most comical.

Ray Harwell
Wheaton, Md.

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The Committee for the Scientific Investigation of Claims of the Paranormal

Scientific Consultants

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Sid Deutsch, professor of bioengineering, Rutgers Medical School
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Sections of the Committee

(Contact members listed for information.)

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UFO Subcommittee: Chairman, Philip J. Klass, 560 N. Street, S.W., Washington, D.C. 20024

Education Subcommitte: Chairman, Elmer Kral, 1124 W. Koenig St., Grand Island, Nebr. 68801

The Committee for the Scientific Investigation of Claims of the Paranormal

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